

ROAD TEST: Readers Rate the Most Popular Notebook PCs

PC WORLD

SEPTEMBER 1991

FIRST TEST CENTER RESULTS

IBM's CLONE KILLER

***Will the Latest PS/2 386s
Make You Come Home to IBM?***

SPREADSHEET BLOWOUT

**Discover Which of the Top
Packages Is Best for You**

NO-FRILLS NOTEBOOKS

**8 Ultralight Road Warriors
Starting at \$2000**

77 HIGH-SPEED MODEMS

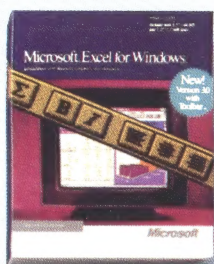
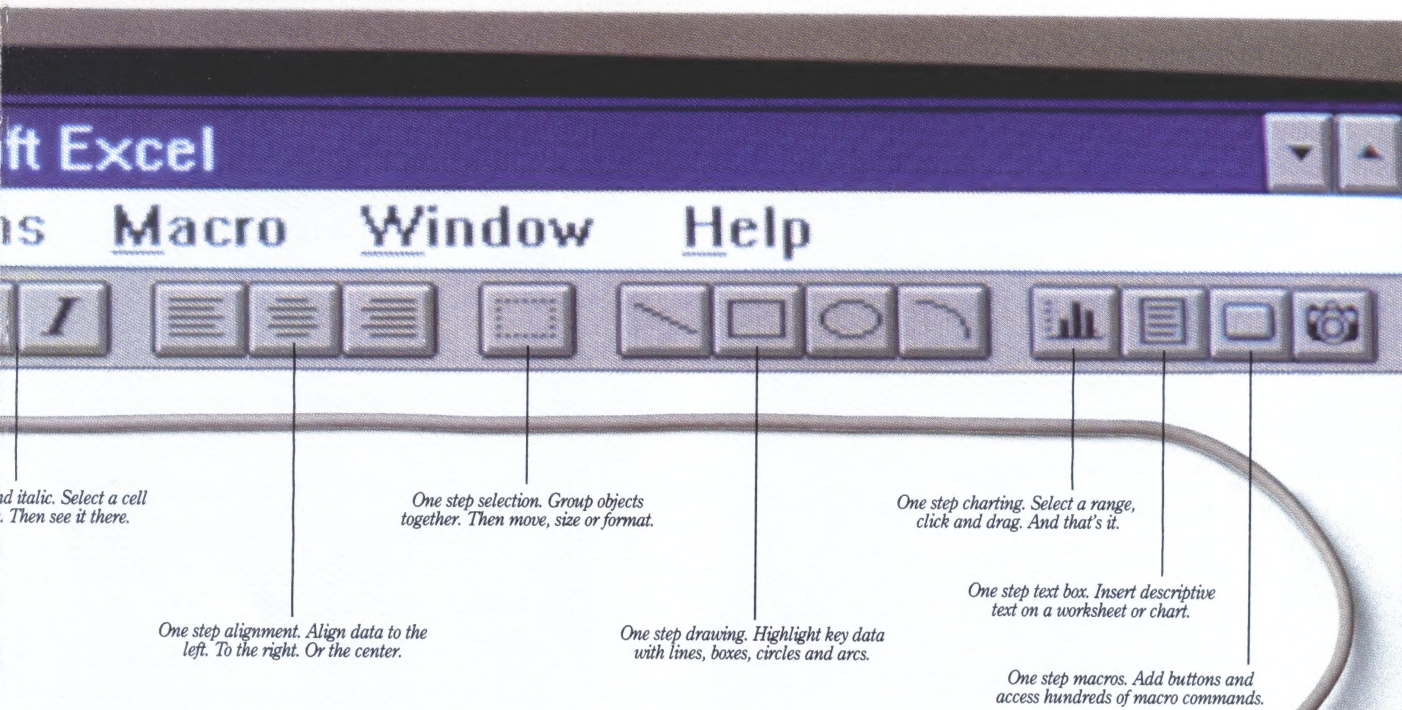
**2400-Baud Sizzlers—
With or Without Extras**



\$3.95 U.S.



only take you one.



Out of the many, many steps it took us to create Microsoft® Excel for Windows™, there were two that really had the most impact. The first

was to listen to our users and to listen carefully. The second was to take that knowledge and implement it intelligently.

The result is outrageous power coupled with ease-of-use. It is this idea that drives all of our efforts. And has since we introduced the first graphical spreadsheet back in 1985.

A recent example of this is the *Toolbar*™. This addition lets you do everything from formatting, to formulas, to outlining with one click of a button.

Best of all, it's easy to make the

move. Microsoft Excel comes complete with online help for 1-2-3® users. So you can actually learn by applying what you already know.

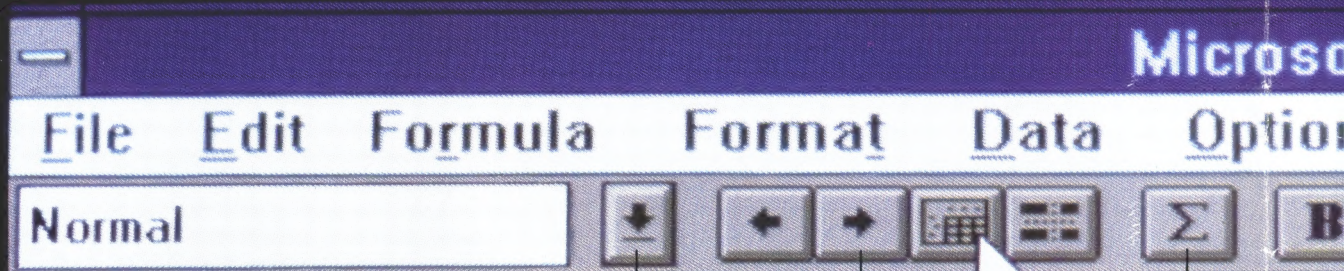
And if you're currently using another spreadsheet, you can upgrade on a limited basis for only \$129.* Why not take the next step. See your reseller or call (800) 323-3577, Department P69.

“Click”



Microsoft®

Fortunately it'll

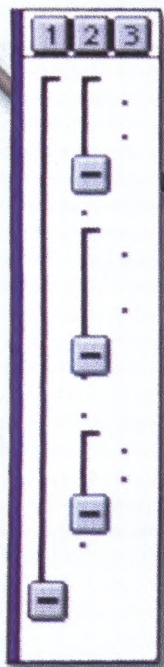


One step outlining. Outline worksheets to see only the detail you need.

One step bold and click here

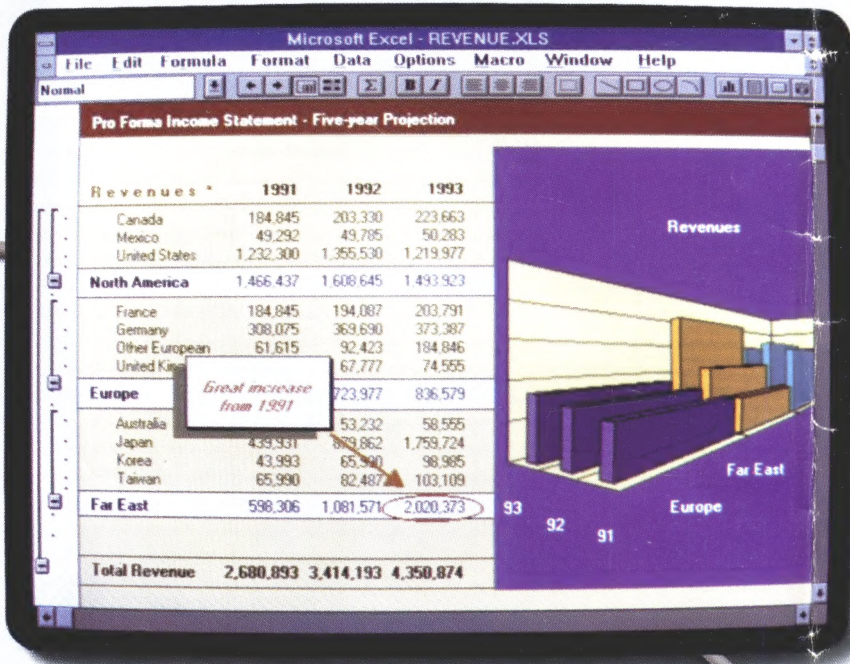
One step styles. Save and apply your own style. It's possible to mix up to 256 fonts, 16 of 16 million colors and 18 patterns.

One step formulas. Use Autosum™ to add a range of cells by double clicking.



Our exclusive Outlining feature lets you expand and collapse your worksheet. So you're able to display and print only the data you need to view or share with others.

Eliminating the need to create separate documents for your boss and your boss's boss. Furthermore, if you don't select specific parameters, the program will automatically outline your worksheet. You can also combine virtually hundreds of worksheets through the consolidation feature. Regardless of format or structure.



Select a range of cells and transform them into a chart on a worksheet. With one simple click. Or why not create a 3-D chart. Then rotate it 360° How's that for a view? With Microsoft Excel, you can choose from 68 different chart types, 24 of which are 3-D. Or even create your own. And because this is a graphical program, it's easy to combine text, data and graphics on a single page. Of course, it's WYSIWYG too. Which means you can actually see what you're working on.

It took us
thousands of
steps to make
this spreadsheet
do what we
wanted.

B

Pro Forma In

1991

184,845

49,292

1,232,300

1,466,437

184,845

PC WORLD

COVER STORIES

PREVIEW

IBM's Counter-Clones Inexpensive, expandable, AT compatible—and from IBM? Get the lowdown on Big Blue's first 20-MHz 386SX systems.

Alan Kaplan 105

REVIEWS

286 Notebooks: Traveling Light Before you shell out for that pricey, battery-gobbling 386SX notebook, check our tests of eight ultralight 286s. Michael Goodwin and TJ Byers 150

Spreadsheets: Beyond Number Crunching Can *Excel* whip 1-2-3, *Quattro*, and the rest? We review the top six spreadsheets and recommend the best for every occasion, from what-if analysis to formatting classy worksheets. Richard Scoville 171

FEATURES

Road Test: Notebook PCs Six veteran users rate popular notebooks from Compaq, Texas Instruments, and Toshiba. Their conclusion: You *can* take it with you. Alice LaPlante 218

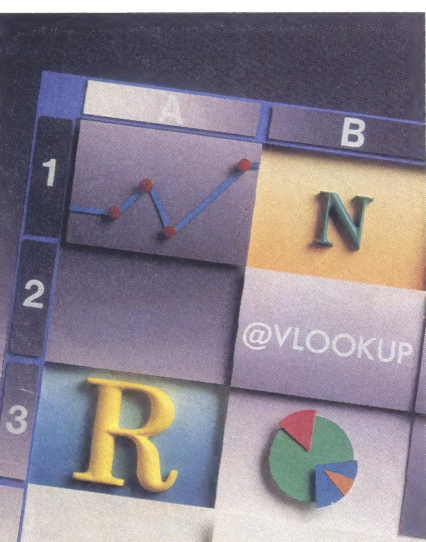
Buyers' Guide: 2400-Baud Modems Sizzling speed, accuracy, and reasonable cost make these modems wise telecommunications buys. Discover which of these 77 models is best for you. Brett Glass 228

Spreadsheets:
Beyond Number Crunching
171

2400-Baud Modems
228

IBM's Counter-Clones
105

Cover design by Bill Jensen
Cover photograph by David Arky





Getting the E-Mail Message 191

Laptops Steal the Show 212



INSIDE

NEWS

TOP OF THE NEWS

Mike Hogan 15

INDUSTRY OUTLOOK

DOS 5.0 earns high marks from early users 83

Palmtop PCs, at a pound or less, gain acceptance 84

PC prices tumble as customers abandon dealers 86

PC World Marketplace: Prices for 30 popular PCs in eight markets, and more 88

PRODUCT OUTLOOK

• WinPrinter 400 125

• MastersPorts, SupersPorts

• @ Mail 126

• Hollywood • OmniLink/Laser 128

• Image-In-Color

• Peachtree Complete Network Accounting, Client Write-Up 137

• Publish It 2.0

• SpeedModem Champ 138

• ProKey for Windows • RSE Variety Pak 140

• MicroPorte 1042

• Network H.Q. 142

PREVIEWS

A New Plain in Color Printing

Tektronix's Phaser Jet PXi offers vibrant color for under \$10,000—and it takes plain paper: Daniel Tynan 115

A New Desktop for Windows

Get organized with the Norton Desktop for Windows John Walkenbach 117

NCR Gestures to the Future

The pen-based 3125 Notepad weighs 3.9 pounds and thrives on Windows. The catch: little available software, high price. Russell Glitman 121

REVIEW

Getting the E-Mail Message

Seven electronic-mail packages demonstrate why E-mail is a LAN's best friend. Robert Lauriston 191

FEATURES

On Site: Laptops Steal the Show

An insurance company's new policy: Boost business by supplying agents with laptops for client presentations. Bronwyn Fryer 212

Share Peripherals Without Networking

How a work group can share peripherals—and skip the LAN. Rex Farrance 226

HOW TO

The Help Screen

Double-sided WordPerfect printing, skip dBASE IV's title screen, and more. Karl Koessel and Robert Lauriston ... 49

Network Q&A

Hooking up remote E-mail. Keith Nickerson 65

Nine Tips for Better Windows Networking

Get the most out of Windows on a LAN. Robert Lauriston 237

Words Into Print

WordPerfect's group editing tools. George Campbell 241

Spreadsheets (A..Z)

Macro subroutines for 1-2-3 and Quattro. Richard Scoville 243

Data Basics

The joy of text: making your data talk. Steve Cummings ... 247

The Art of Persuasion

Using clip art effectively. Richard Jantz 249

Windows Workshop

Fine-tune printing from Windows. Jesse Berst and Scott Dunn 257

The Information Edge

Rating Delphi, CompuServe, and GENie. Judy Heim 261

User Group Tips

Hands-on advice from users across the nation 263

Star-Dot-Star

Fix the Midnight Bug, load 1-2-3 files from the command line, and more. Edited by Brett Glass 265

Instant Reference Card

Word for Windows, from menus to macros 269

Developer's Toolbox

Using Visual Basic 275

DEPARTMENTS

In This Issue 11

Richard Landry 21

Letters 27

Windows Quiz Answers 38

Consumer Watch 69

Manager's File 79

Two-Fisted Management 101

The Home Office 320

INFORMATION

PC World Catalog 276

Advertiser Index 291

Products Featured in Editorial 293

PC World Mail-Order Shopping Guide 297

Why
our Tempo
can't be
beat.





Tempo 486SX/20

\$2,599

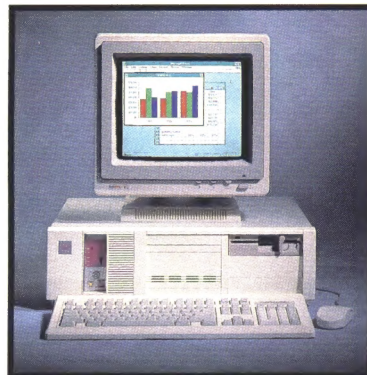
- Intel® 80486SX 20MHz CPU
- VGA Adaptor Included
- Standard 1MB RAM (Expandable to 32MB)
- 128KB Static RAM Cache
- 1.2MB 5.25" Diskette Drive
- Zero Wait-State Operation
- Intel 80487SX Math Coprocessor Socket
- Small or Large Footprint
- DOS 5.0 Included
- Novell® Certified



Tempo 386/25

\$1,699

- Intel 80386 25MHz CPU
- Standard 1MB RAM (Expandable to 16MB)
- 64KB Static RAM Cache
- 1.2MB 5.25" Diskette Drive
- Zero Wait-State Operation
- Socket for Intel 80387 or Weitek® 3167 Math Coprocessor
- DOS 5.0 Included
- Novell Certified



Tempo 386/20

\$1,549

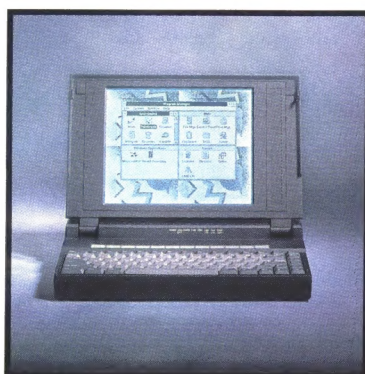
- Intel 80386 20MHz CPU
- Standard 1MB RAM (Expandable to 16MB)
- 64KB Static RAM Cache
- 1.2MB 5.25" Diskette Drive
- Zero Wait-State Operation
- Socket for Intel 80387 or Weitek® 3167 Math Coprocessor
- DOS 5.0 Included
- Novell Certified



Tempo 386SX/16

\$1,149

- Intel 80386SX 16MHz CPU
- Standard 1MB RAM (Expandable to 8MB)
- 1.2MB 5.25" Diskette Drive
- Zero Wait-State Operation
- Small or Large Footprint
- 80387SX Math Coprocessor Socket
- DOS 5.0 Included
- Novell Certified



Tempo LX Notebook ALL NEW! \$2,899

- Intel 80386SX 16MHz or 20MHz CPU
- VGA Backlit Display
- 2-3 Hour Battery Life
- 1-Hour Quick Charge
- Full-Travel, 83-Key Keyboard
- 1MB RAM (Expandable to 5MB)
- 20MB, 40MB or 60MB Internal Hard Drive
- 1.44MB 3.5" Internal Diskette Drive
- 80387SX Math Coprocessor Socket
- DOS 5.0 Included
- 7.1 lbs (Including Battery)



Tempo 286/16

\$999

- 80286 16MHz CPU
- Standard 1MB RAM (Expandable to 4MB)
- 1.2MB 5.25" Diskette Drive
- Zero Wait-State Operation
- Small or Large Footprint
- 80287 Math Coprocessor Socket
- DOS 5.0 Included
- Novell Certified



Tempo 286/12

\$949

- 80286 12MHz CPU
- Standard 1MB RAM (Expandable to 4MB)
- 1.2MB 5.25" Diskette Drive
- Zero Wait-State Operation
- Small or Large Footprint
- 80287 Math Coprocessor Socket
- DOS 5.0 Included

Price has a lot to do with it. But don't let the prices fool you.

With the Everex™ Tempo™, we have created ideal tools for businesses that require low cost IBM®-compatible PCs with performance that never lets up. In an office or on the road, they're everything you or your company will need for optimum PC performance.

Each product in the Tempo family includes an enhanced keyboard. One parallel and two serial ports. Eight expansion slots for the large and small footprint models, four for the slimline compact footprint, and one proprietary for the Tempo LX Notebook. 1:1 interleave hard disk controllers. And, they're supported by a full array of Everex peripherals.

What's more, every Tempo PC is

compatible with the high-performance Everex STEP™ line of computers.

Every Tempo computer is backed by a full one-year parts warranty and a three-month on-site service warranty.

Catch the Tempo family at a reseller near you. To find out where, call **1-800-345-3839**. Outside the U.S., call **415-498-1111** or FAX us at **415-651-0728**.

But hurry, because at these prices, the Tempo is moving fast!

\$355.00 Value!

- **FREE** Windows 3.0
- **FREE** Mouse
- **FREE** DOS 5.0
- **FREE** Phone Call

EVEREX
EVER for Excellence®

World's Smallest New! For IBM Compatibles & Laptops

Portable r/w Optical



Mac or IBM

128 mb per
Cartridge

The Liberty 115 Series r/w 3.5" Optical offers the latest in portable optical storage. Whether your needs are large or small, the security of optical storage is unsurpassed. The Liberty 115 Series r/w is a 115cu.in. read/write Magneto Optical drive with a capacity of 128Mb on 3.5" removable media boasting a 35ms access time all in a portable package measuring 1 1/4"x6 1/8"x9" weighing only 4.5lbs. Plugs directly into parallel port on IBM Compatibles & Laptops, no interface card is necessary. Plugs directly into Apple computers.

Portable Hard Drives



Parallel/Printer Port Models

Mac or IBM

Weight: 2.5lbs.
Size: 1 1/4"x4"x7"

120Mb

Measuring only 1 1/4"x4"x7" and weighing in at only 2.5lbs the Liberty 50 Series Hard Disk Drives present fast and reliable mass storage. With access times as low as 10 ms the 50 Series Hard Disk Drives are available in sizes ranging from 40Mb to 120Mb packed into 50cu.in. (425MB available in 70cu.in. form factor). No cards needed for IBM desktops or laptops. Plugs directly into Apple computers. Integrated internal power supply.

Portable Removables



44Mb or 88Mb
per Cartridge

Mac or IBM

With the Liberty 115 Series Removable, unlimited Storage is the key. Whether you require mass storage, backup capability, security, or the plain convenience and reliability of removable disk storage Liberty's 115 Series Removable fulfills your needs. At only 115cu.in. (1 1/4"x 6 1/8"x9") and 4.5lbs, and with 44Mb or 88Mb options at 20ms access times, all your portable data storage needs are met. No cards needed for the IBM desktops or laptops. Plugs directly into Apple computers.

All units have a power supply inside the drive case. A optional international power supply (inside case) is an additional \$50.



(408) 983-1127
Fax: (408) 243-2885

160 Saratoga Ave., Suite 38
Santa Clara, CA 95051

Richard Landry **Editor in Chief,**
Associate Publisher

Eric Knorr **Editor**
Russell Glitman **Executive Editor**

Senior Editors
Reviews Eric Brown
News Mike Hogan

East Coast Editor
Eric Bender

Editorial
Managing Editor Steve Fox
Assistant Managing Editor Cynthia Brown
Technical Editor Karl Koessel
Associate Editors Bronwyn Fryer, Roberta
Furger, Michael Goodwin, Daniel Tynan
Assistant Editors Rex Farrance, Susan Lusty,
Melissa R. Riofrio, Cathy Smith, Lincoln Spector

Copy Chief Jane Paulsen
Sr. Copy Editors Barbara Lewis, Peggy Nauts
Copy Editors Bonnie Jacobson, Marla Miyashiro
Administrative Assistant John Goddard

Typesetting Manager Mark L. Duran
Typesetter Henry Pham

Business Manager Scott Danish

Art & Design
Art Director Mitch Shostak
Associate Art Directors Robert Kanes,
Greg Silva
Senior Designer Emily Wollenweber
Senior Design Associates Barbara
Adamson, Laura Pannbacker
Asst. Designer/Infographics Hope Winslow
Production Artist Marlene Tobias

Contributing Editors
Anita Amirrezvani, Steve Bass, Jesse Berst, TJ
Byers, George Campbell, Steve Cummings, Brett
Glass, Judy Heim, Mark Henriks, Richard Jantz,
Robert Lauriston, Robert Luhn, Carole
Matthews, Martin Matthews, Richard Scoville,
Ralph Soucie, Scott Spanbauer, John Walkenbach

David Bunnell **Founder**
Andrew Fluegelman **Founding Editor**

User Group Advisory Board
Tony Barcellos, Sacramento PC Users Group;
Steve Bass, Pasadena IBM Users Group; Roger
Bender, Microcomputer Managers Association
(MMA); Jack Bolton, Atlanta PC User's Group;
Brian Camenker, Boston Computer Society; Mary
Dolce, Chicago Computer Society; Al Harrison,
Houston Area League PC Users; David Hoffman,
NYPC; Brian Livingston, MMA; Joseph Rigo,
NYPC; Irving Samuels, Capital PC User Group;
Jerry Schneider, Association of PC User Groups

Patrick Kenealy **President & Publisher**
Richard J. Marino **Associate Publisher**

This issue is dedicated to the memory of Jeffrey
S. Glines, 1951-1991.

HOW TO CONTACT PC WORLD

Unless otherwise indicated below, please direct
all correspondence and inquiries as follows:

Mail: PC World Editorial
501 Second St. #600
San Francisco, CA 94107
CompuServe: 74055,412
MCI Mail: PC World Editorial
Phone: 415/243-0500
Fax: 415/442-1891

Subscription Services/Address Changes
Call toll-free 800/234-3498 (303/447-9330 in
Colorado), or write Subscriber Services, P.O.
Box 55029, Boulder, CO 80322-5029. To place
new orders, call 800/825-7595.

Letters to the Editor
PC World welcomes your comments and opin-
ions. Address editorial correspondence to *Let-
ters to the Editor*. Letters intended for pub-
lication should not exceed one double-spaced
page. Be sure to include your name, city, and
state. We reserve the right to edit all letters.

Help With Your PC Hardware or Software
If you have a problem, PC World may have the
answer. Send written questions about PC
products and procedures to *The Help Screen*
and network-related questions to *Network
Q&A*. Send consumer-related questions and
complaints to Roberta Furger, *Consumer
Watch*.

Reader Submissions
PC World encourages readers to share techni-
cal solutions. We pay \$25 for each *Power Tip*
published in the magazine, \$50 for *User
Group Tips*, and \$25 to \$200 for *Star-Dot-
Star* items. Keep submissions brief (*Power
Tips* and *User Group Tips* to 100 words or
less). We cannot acknowledge unpublished
submissions; accepted submissions will be
acknowledged by payment.

New Product Information
Send hardware press releases to Melissa
Riofrio, Assistant Editor, or call her at
415/978-3179. Send software product an-
nouncements to Susan Lusty, Assistant Editor,
or call her at 415/978-3321.

Reprints and Permissions
You must have permission before reproducing
any material from PC World. If you want to
quote from or reprint any portion of any arti-
cle or use artwork or photographs from the
magazine, send a written request to PC
World, Reprints and Permissions, 501 Second
St. #600, San Francisco, CA 94107; include a
phone number to ensure a fast response. To
order reprints of PC World, call 415/978-3162.

Editorial Calendars
To receive a copy of PC World's Editorial Cal-
endar, call your nearest regional PC World ad-
vertising sales office. See the Advertiser Index
for phone numbers.

PC World™ (ISSN 0737-8939) is published monthly at \$29.90 for one year (12 issues), \$59.80 for two years (24 issues), \$89.70 for three years (36 is-
sues) by PC World Communications, Inc., 501 Second St. #600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with addition-
al postage. Add \$18 per year for Canada and Mexico; add \$46 per year for airmail for all other countries. Canadian GST Registration #R124669680.
Second-class postage paid at San Francisco and additional mailing offices. POSTMASTER: Send address changes to PC World, Subscription Dept.,
P.O. Box 55029, Boulder, CO 80322-5029. Editorial and business offices: 501 Second St. #600, San Francisco, CA 94107, 415/243-0500; CompuServe
74055,412; MCI Mail PC World Editorial. PC World™ is an independent journal, not affiliated in any way with International Business Machines
Corporation. IBM is a registered trademark of International Business Machines Corp. Copyright © 1991, PC World Communications, Inc. All rights
reserved. The following are trademarks of PC World Communications, Inc.: Consumer Watch, PC World View, *, *, PC World.



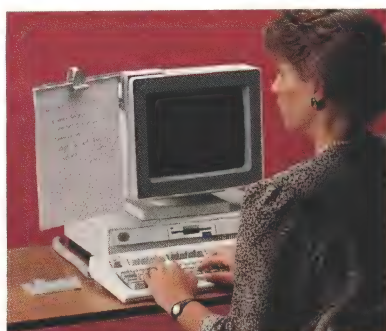
Made in USA
Lifetime Warranty

Curtis Clip, Only \$6.⁹⁵

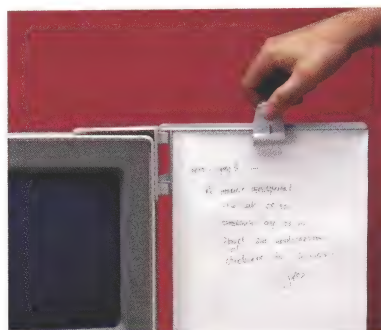
Improve Data Entry, Reduce Eye Fatigue

The new and improved Curtis Clip positions copy perfectly so your eyes no longer have to refocus from desktop to monitor. It holds any standard paper securely, uses no desktop space, and swings out of the way when not in use. The ready-

to-use Curtis Clip features safe non-magnetic construction, and fits all monitors using included hook and loop fasteners. The new and improved Curtis Clip – it will change the way you work with computers forever. #CC-1 Retail . . . Only \$6.95



Speeds data entry. Switches for right or left hand use in seconds.



Stronger, redesigned spring-action clip holds any standard paper securely.

**Curtis products are available worldwide.
For more information call (603) 532-4123 Ext. 40.**

Manufacturing Company, Inc.

CURTIS

30 Fitzgerald Drive, Jaffrey, NH 03452-1931

©Curtis Manufacturing Company Inc.

To compete in the '90s, you need...

open communications using TCP/IP, OSI, ISDN,

data transparency across IBM, Apple®, DEC, HP

network management that's easy, reliable and rich

advanced applications like image, telephony and

an extensive growth path that protects your investment

a high-function server that makes cooperative processing

SNA, Ethernet and Novell®

and other platforms

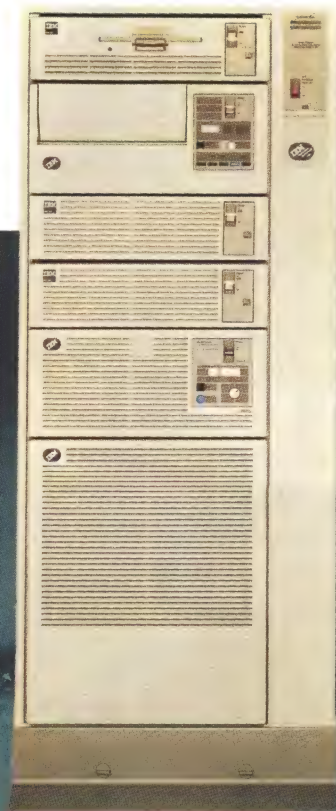
ly developed

computer-based FAX

ments in software and hardware

cessing a reality

...an IBM AS/400.®



*To find out more about how
the IBM AS/400 can give
you a competitive edge, call an
IBM marketing representative.
Or, call for free literature
including the IBM AS/400
Solutions Catalog.
1 800 365-4 IBM, ext. 12*

IBM Rochester



Some call this mapping. We call it figuring out why Tucson didn't meet its quota.



We also call it Harvard® GeoGraphics.

It's a brand new mapping program from Software Publishing Corporation. That lets you present facts and figures in a context your audience will understand.

Namely, maps.

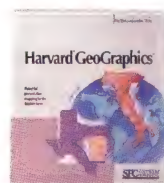
Choose from countries, states, counties and city locations. And each map can be

custom-defined, automatically color-coded or even linked to a spreadsheet or database.

The technique is called mapping.

But we think you'll call it just plain smart.

SPC SOFTWARE
PUBLISHING
CORPORATION



For your free Harvard GeoGraphics demo disk, call 1-800-336-8360, Operator 703.

Harvard is a registered trademark of Software Publishing Corporation. ©1991 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210.



Contributing Editor Alan Kaplan ponders IBM's new PS/2 Model 35.

Strange but true: PCs don't seem to break down much anymore. Occasionally a keyboard fails, a system loses its setup information, or a hard drive burps and sends our tech editor running for *The Norton Utilities*. But such glitches are rare, and the catastrophic system failures of yore appear to be almost extinct.

Indeed—with a few notorious exceptions—no brand of PC seems more or less prone to failure than another.

That kind of realization is dangerous for companies like IBM. Why pay top dollar for a PS/2 system when a cut-rate clone seems to do the job just as reliably?

As our cover story attests, IBM has responded to the clone challenge. Alan Kaplan, contributing editor and the story's author, believes IBM's best reply would have been a wave of exciting new technology. "Here was an opportunity to hop a generation," says Kaplan, "to introduce something dramatic."

Instead, IBM's first 20-MHz SX systems compete solely on price. PS/2 Models 35, 40, and 57 sell for less than you'd expect: The Model 35 starts at \$1995. Compare this price tag, taking into account IBM's steep dealer discounts, with the base price for a 20-MHz SX from celebrated clone maker Gateway 2000, and the Model 35 may sell for \$400 less than Gateway's unit.

Impressive, until you look closely. The Gateway system comes standard with 4MB RAM, an 80MB hard disk, a VGA monitor, a floppy drive, and one year's on-site service. With the Model 35, you get the floppy drive—period. Ask for the same fully loaded deal, and you could pay twice as much for the IBM as for the Gateway.

IBM's Lukewarm Counterattack

But what of the PS/2 line's vaunted reliability? "Let's assume, for argument's sake, that the IBM machine really *is* more reliable," says Kaplan. "You can buy two clones with the money you'd spend on one IBM, so if one clone burns up, you can throw it out the window, and you'll still be ahead." In short, the new pricing is good news for IBM loyalists, but unexciting for those who now view PCs as commodity items.

Some might exalt the technical advantages of the PS/2 line. However, not only do all three machines lack the handy snap-in drives of previous PS/2s, but the Model 35 and the Model 40 also reject the Micro Channel bus in favor of the old-fashioned AT bus. Why? Because many customers prefer AT expansion boards—Micro Channel boards cost more and don't offer the wide variety. And with few devices available that take full advantage of the Micro Channel's higher throughput, the benefits remain elusive.

The PS/2s offer only one new and noteworthy piece of technology: a 3½-inch 2.88MB floppy drive. Part and parcel of the Model 57 and an option with the others, this drive will undoubtedly set a new standard, one befitting users who need to transport large graphics-based files.

"People depend on IBM to set standards," says Kaplan, and aside from the 2.88MB floppy, these PS/2s clearly do not. Without significant new advances, manufacturers will continue to compete on price, which in the short term is good news for PC buyers. But someone needs to set tomorrow's standards—for erasable optical storage, photo-realistic graphics, and other technologies required by the next generation of multimedia PCs. As Kaplan puts it, IBM's "lukewarm counterattack" leaves us waiting for the other shoe to drop. ●

Eric Knorr

Eric Knorr
Editor

WANT TO SAVE THOUSANDS ON A COMPUTER? BUY AN AUSTIN.



\$6990

THE AUSTIN 486/33 EISA WINTOWER

INTEL 486™/33MHZ PROCESSOR, EISA
BUS ARCHITECTURE, 330MB HARD DRIVE,
4MB RAM, 128K EXTERNAL CACHE, VGA
MONOCHROME MONITOR

\$9649

THE DELL 433TE

INTEL 486™/33MHZ PROCESSOR, EISA
BUS ARCHITECTURE, 330MB HARD DRIVE,
4MB RAM, 128K EXTERNAL CACHE, VGA
MONOCHROME MONITOR



AUSTIN 386/SX16 WINSTATION

\$1790

Microprocessor: 386/SX running at 16MHz

Special Features: Pre-loaded with Microsoft Windows 3.0, MS-DOS 5.0 and a Microsoft mouse

Storage: 40Mb IDE hard drive

Memory: 2Mb RAM

Video: 14" non-interlaced 1024 x 768 VGA color monitor with 1 Mb VGA color video adaptor. Other options available. Call for details.



AUSTIN 386/SX20 WINSTATION

\$1890

Microprocessor: 386/SX running at 20MHz

Special Features: Pre-loaded with Microsoft Windows 3.0, MS-DOS 5.0 and a Microsoft mouse

Storage: 40Mb IDE hard drive

Memory: 2Mb RAM

Video: 14" non-interlaced 1024 x 768 VGA color monitor with 1 Mb VGA color video adaptor. Other options available. Call for details.



AUSTIN 386/25 WINSTATION

\$2090

Microprocessor: 386 running at 25MHz

Special Features: Pre-loaded with Microsoft Windows 3.0, MS-DOS 5.0 and a Microsoft mouse

Storage: 40Mb IDE hard drive

Memory: 2Mb RAM

Video: 14" non-interlaced 1024 x 768 VGA color monitor with 1 Mb VGA color video adaptor. Other options available. Call for details.



AUSTIN 386/33 WINSTATION

\$2390

Microprocessor: 386 running at 33MHz

Special Features: 128K system cache. Pre-loaded with Microsoft Windows 3.0, MS-DOS 5.0 and a Microsoft mouse

Storage: 85Mb IDE hard drive

Memory: 2Mb RAM

Video: 14" non-interlaced 1024 x 768 VGA color monitor with 1 Mb VGA color video adaptor. Other options available. Call for details.



AUSTIN 486/25 WINSTATION

\$3590

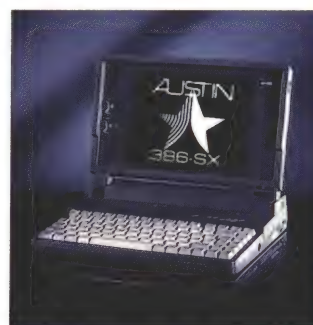
Microprocessor: Intel 486™ running at 25MHz

Special Features: Internal 8K cache. Microsoft Windows 3.0, MS-DOS 5.0 and mouse.

Storage: 125Mb IDE hard drive with 32K cache

Memory: 4Mb RAM (expands to 32 Mb)

Video: 14" non-interlaced 1024 x 768 VGA color monitor with 1 Mb VGA color video adaptor. Other options available. Call for details.



AUSTIN 386/SX16 NOTEBOOK

\$2495

Microprocessor: 386/SX running at 16MHz

Special Features: Under 8 lbs. with battery. Up to 7 hour battery life, battery and recharger included

Storage: 40Mb hard drive. 1.44Mb floppy disk drive

Memory: 2Mb RAM

Video: Brilliant 10" VGA LCD display with 640 x 480 resolution and 32-gray scale

Keyboard: Full size embedded numeric pad with 12 function keys. Other options available. Call for details.

TO ORDER CALL:
1-800-833-3657

VAR 1-800-338-1569 OVERSEAS (512) 339-3500
GOVT 1-800-833-4472 NETWORKING 1-800-874-7182
FAX (512) 454-1357 CANADA 1-800-338-1565
FORTUNE 1000 1-800-622-5506

IN A RUSH? WE CAN SHIP OVERNIGHT OR NEXT DAY AIR.
ALL TIME ZONES MON-FRI 7AM-7PM SAT 10AM-5PM

AUSTIN'S AWARD-WINNING COMPUTERS HAVE COMPONENTS LIKE INTEL, MIT-SUBISHI, SEAGATE, MICROSOFT, AND KEYTRONICS. JUST LIKE DELL. AUSTIN HAS TOLL-FREE PHONE SUPPORT, NEXT-DAY ON-SITE SERVICE, 100% FINANCING, LEASE OPTIONS, AND A 30-DAY MONEY-BACK GUARANTEE. JUST LIKE

DELL. BUT DELL CHARGES YOU HUNDREDS, EVEN THOUSANDS OF DOLLARS MORE FOR THE SAME PERFORMANCE AND FEATURES. JUST LIKE COMPAQ. **AUSTIN COMPUTER SYSTEMS**



Circle 14 on reader service card

**"We launch
1000 shuttle trips
every day with
our LANtastic
network."**

—John Kindt, President,
Prime Time Shuttle, Sun Valley, CA



ARTISOFT SHATTERS THE MYTH!

1990
WINNER
PC Magazine Award
for Technical Excellence



For more information call Artisoft at (602) 293-6363,
or visit your Artisoft Authorized Five Star Dealer.



**AUTHORIZED
DEALER**

©1991 by ARTISOFT, Inc. All rights reserved. LANtastic is a trademark of Artisoft, Inc.

On a normal day, Prime Time Shuttle makes 1,000 trips from four Los Angeles airports, one AMTRAK station, and the San Pablo Harbor, via LA's notorious freeway system, to homes and offices in four Southern California area counties.

At any given moment Prime Time Shuttle has 60 to 90 vans on the road. They track every flight so they know when each passenger arrives. They promise service within 15 minutes of the reservation or the ride is free, a promise they keep 97% of the time.

How do they do it? Back at headquarters, computers are taking reservations, verifying credit card charges, blocking reservations to assign to drivers, tracking the vans along the highways, recording the drivers' commissions as they are earned, and updating management with constant progress reports.

Kory Washburn is the assistant manager of Prime Time Shuttle who set up the computer system. He started December 23, 1990 with one dispatcher's computer. Now he's running 30 machines on a

LANtastic Ethernet system, and expects to add a new computer to the system every week until they reach 50 nodes.

He chose LANtastic because of the flexibility of its peer-to-peer structure. "Instead of a single overloaded server, we broke down the tasks, spread them over multiple servers and still fully interconnect the system with cheapernet cable."

Washburn praises Artisoft hardware and LANtastic software compatibility with other manufacturers' cards and systems. "You can't beat the price. And the speed is incredible, especially the way we abuse the system," he confessed.

"Artisoft tech support stuck with us until they solved our problems. They were great."

There's a myth that LANtastic is only suited to small, simple systems. But next time you need a ride from LAX, remember LANtastic is the Prime Time network.

ARTISOFT
Revolutionizing Connectivity

Circle 18 on reader service card

MIKE HOGAN

New OS Plan Unfolds

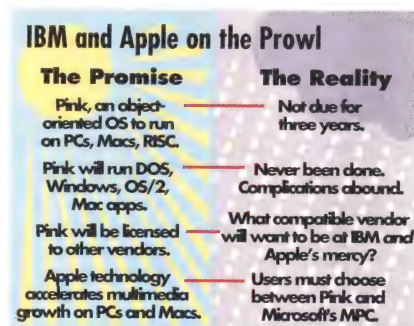
Will Users Get More or Fewer Choices?

Will IBM and Apple's joint venture let users run both DOS and Macintosh software, or is it a ploy to cut them off from low-price clones? A preliminary contract calls for the pair to build a cross-platform, object-oriented operating

system based on Apple's next version of Mac system software (code-named Pink). Still years away, the environment will run today's DOS, Windows, OS/2, and Mac packages and be licensed by any vendor. Apple will build workstations based on IBM's RISC architecture, and the duo will work together on connectivity and multimedia projects.

Ostensibly, the deal ends Apple's self-imposed isolation from the DOS marketplace and gives it a better shot at corporate customers. Big Blue hopes to promote its RISC designs in the fast-growing workstation market and free itself from dependence upon Microsoft system software. The move "puts Microsoft and Intel on notice that there are alternatives," notes Computer Intelligence analyst Dan Ness.

The venture will eventually yield better software, predicts Yankee Group analyst Paul Zagaeski, but not without near-term standards confusion as the IBM-Microsoft-Intel alliance breaks up. "You'll see accelerating aggressiveness from all of the vendors concerned," he says. "There will be turmoil and confusion and end users screaming, 'You



The Apple-IBM venture promises more software and system choices but faces many obstacles.

promised this."

Others ask if this isn't merely an attempt to parry the price assaults of other vendors and wonder if such old adversaries can collaborate. IBM's many recent software alliances are "an indication of corporate confusion," declares Jeff Silverstein, publisher of *Software Industry Bulletin*. "Here they go with what they hope will be an even better operating system than OS/2 2.0."

Microsoft-IBM Battle Splitting Users

Users and software developers will be forced to take sides in the software battle royal raging between Microsoft's Windows and IBM's OS/2. Microsoft hardened battle lines in July by breaking its promise to build OS/2 support into the first release of its next-generation 32-bit operating system, now dubbed Windows NT. That development closely followed a Microsoft memo in which Chair Bill Gates vowed to take steps to prevent customer defections from Windows to OS/2, the operating system his company touted for the past four years. Current OS/2 1.3 sales hardly

Borland to Keep A-T Products

Borland International, which offered \$440 million in stock for Ashton-Tate in July, plans to sustain all Tate's lines and make dBASE one of a variety of front ends that its Windows-based offerings will be able to read in the future.

"We will continue to protect the DOS products," says Borland vice president Rob Dickerson, "and provide a migration path to Paradox by letting users access it through the language or reports, forms, or queries of their choosing."

Borland is perhaps particularly well-suited to this task because its object-oriented technology promises a high degree of file and language independence. The first examples should appear next year in Paradox for Windows and a dialect-independent interpreter/compiler code-named Object dBASE.

Users like Rock Blanco, vice president of information

systems at Garber Travel Service in Boston, express relief and enthusiasm. A dBASE loyalist, Blanco's anxious for the long-awaited dBASE compiler to let him distribute applications more easily among his 900 travel agents and 500 corporate clients. Users and developers can have more faith in the dBASE standard now, says Michael Masterson, president of Masterson Consulting and founder of the Silicon Valley dBASE Language Group. "We now have a true language company with serious market clout to legitimize the dBASE [dBASE] standard."

To this Ashton-Tate adds strong dealer, VAR, and international sales channels and a healthy balance sheet with almost \$100 million in cash, notes Charlotte Walker, analyst at Labe, Simpson & Company, and its products complement Borland's, especially its object-oriented SQL server from Interbase.

Patricia Seybold's Office Computing Group.

With its 32-bit architecture, memory protection, sophisticated multitasking, and ability to handle DOS and Windows apps, OS/2 2.0 is far more advanced than Windows 3.0 or the upcoming 3.1. Reliability is key for users who tire of seeing 'Unrecoverable Application Error' on their screens. Microsoft's answer, Windows NT, is at least a year away; its OS/2-compatible successor is even further out.

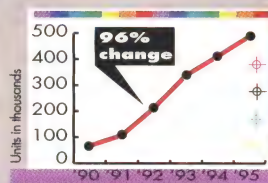
With only 4 percent of operating system sales, OS/2 has an uphill fight. "OS/2 2.0 is a great pitch, but they've got to get some applications," notes Michael Goulde of Open System Advisors.

Color for "the Rest of Us"

Hewlett-Packard has introduced a new ink jet printer that is expected to expand the use of color beyond the realm of graphics-heavy applications and into everyday uses. HP's \$1095 DeskWriter C for the Macintosh batters the price premium for color, offering laser-quality printing at a dot matrix price.

Currently, 300-dpi color printing is restricted to much more expensive devices such as the Texttronix Phaser II SX thermal transfer, which lists for \$5000. HP recently reduced prices \$400 for its

Color Ink Jet Printer Sales



Source: BIS Strategic Decisions

Color printer sales should jump next year as HP's cheap ink jet brings color to occasional users.

PaintJet for PCs and PaintWriter for Macs to \$995 each, but they offer only 180-dpi resolution and are designed primarily for graphics uses.

HP puts the DeskWriter C in a new class—the color-capable monochrome printer. Research by BIS Strategic

Decisions shows that most users want to print monochrome text 80 percent of the time and only need color, primarily for graphics, during the remaining 20 percent. The price, operating costs, and design of past color printers have restricted their use to formal publishing and presentations by graphics professionals and to work groups also served by monochrome workhorses.

The DeskWriter C comes equipped with a \$20 black ink cartridge for volume text printing at 3 pages per minute. It can be swapped with a new \$35 color cartridge for occasionally adding spot color to memos and spreadsheets at a

slower 4 minutes per page. Unfortunately, the color cartridge prints black as a composite.

The new printer will help color ink jet sales nearly double next year to 215,000, predicts BIS vice president Peter Testan, who envisions expensive color printers being relegated to the graphics niche. "The major market growth is black-and-white with a color feature. When we have color lasers, they too will be primarily black-and-white devices with color added."

HP refused to discuss whether it plans to introduce a new color ink jet printer for PCs, but to date, its Mac products have PC counterparts.

More Battery Life Coming

Notebook PC users can look forward to as much as 4½ hours of battery life and/or greater processing power this fall—even the muscle to run complex applications such as handwriting recognition. Battery life has held relatively steady at 3 hours or less for the past year, but a dogfight is about to break out between proponents of Intel's 386SL chip and Advanced Micro Devices' just-released SX clones.

AMD claims that upcoming systems built around its 25-MHz Am386SXL-25 will offer up to 4½ hours of useful battery life and 25 percent more power than Intel's 20-MHz 386SL or 386SX chips, which are rated at around 3½ and 3 hours, respectively. There should be at least a dozen 386SL and Am386SXL-25 systems offered at COMDEX Fall, including AMD versions from some large players who are showing their systems privately. In fact, the coming crush of Am386SXL-25 introductions has caused Bell Computer of Van Nuys, California, to move on to a 40-MHz notebook based upon AMD's

Am386DXL-40. This chip's full 32-bit architecture makes it ideal for the handwriting recognition needed by slates, says AMD.

Meanwhile, Intel has rallied its share of developers—Zenith, ALR, Everex, Mitac, and Twinhead—around the 386SL, but the chip requires a significant redesign, while the AMD chip can run from current 386SX designs with minor alterations. An important power-saving element of the 386SL and the AMD chips is the ability to turn their clocks to 0 MHz. AMD claims a further edge in being able to turn off the entire computer between keystrokes without having to save CPU registers to memory.

That assertion still needs to be tested under real-use conditions, points out Genelle Trader, director of marketing for AST's portable systems. But AST customer research reveals a still-greater appetite for battery life. "Users would take 6 hours if they could get it," declares Trader, whose company is studying both designs. ●

Industry Leaders Offer New Benchmarks

Rather than test the performance of isolated system components, it makes more sense to compare PCs based on how they run the most popular applications, say Intel and other industry leaders. They plan to offer a set of low-cost, application-oriented benchmarks they maintain will let users compare how different PCs perform in the office more easily than the many low-level tests of CPU, disk, and I/O performance often used.

The companies—including IBM, Hewlett-Packard, Novell, and Microsoft, among others—have formed the non-profit Business Applications Performance Corporation to assemble and distribute benchmarks on disk as well as publish test results in a newsletter. The first set of benchmarks for single-user, single-tasking PCs—based upon such market leaders as *1-2-3*, *dBASE IV*, and *WordPerfect*—should arrive this fall,

followed by multitasking and network suites.

"This is really important," asserts Louis Giglio, vice president at Bear, Stearns & Co. "After all, what do 'Dryhstone' and 'Whetstone' mean to a business computer user?"

The benchmarks will cost little but require users to have a full set of the apps they employ—a prerequisite that could skew their usefulness toward larger PC users. Smaller shops can get results through a newsletter.

"We love the idea," says Suzanne Hackett, manager of performance management and information services at McDonnell-Douglas Aircraft in Long Beach, California. She saves worker hours by using test results from resellers and others to narrow the candidate pool for the 500 PCs her firm buys annually. "But with everyone testing things in so many ways, it's difficult to find a standard set of criteria."

THE PC TITANS HAVE DECLARED WAR...



 **GATEWAY2000**

"You've got a friend in the business."

PEOPLE IS GATEWAY 2000 — WE SHALL PREVAIL!



m to possess a personal computer.
icated himself to opposing this
ades and fashioned a company
the people at a fair price. That

the merry men and women who
e pinch. Not to be outwitted by
the forest people. They made
or market share, even though their

crusade resulted in a paltry savings.

The battle rages today. But you know how the story ends. The Titans, having grown to lumbering proportions, are no match for the swift, lean woodsmen. The best value shall prevail. When it comes to price, quality and service, the arrow that flies straight and true belongs to Gateway 2000, the legendary Champion of the People.

So buy a
Gateway and
live happily
ever after.



"You've got a friend in the business."

YET THE CHAMPION OF THE AND THE BEST VALUE



nce upon a time, you had to spend a king's ransom. In those days there lived a young rebel who defied tyranny. He gathered about him a band of renegades that sold the same quality technology directly to you. The company was called Gateway 2000.

Over the years the people grew to love Gateway's computers and built, sold and serviced them – so much so that the PC Titans felt threatened. A troop of outrageous mavericks, the Mighty Titans declared war on Gateway. Much ado about rolling heads and slashing prices in a fierce battle.

GATEWAY 2000 SYSTEMS

16MHz 286 VGA

- 80286 Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124 Key AnyKey™ Keyboard
- New MS DOS™ 5.0

\$1395

16MHz 386SX VGA

- Intel™ 80386SX Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124 Key AnyKey Keyboard
- Microsoft™ Mouse
- New MS DOS 5.0
- MS Windows™ 3.0

\$1495

20MHz 386SX CACHE

- Intel 80386SX Processor
- 32K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124 Key AnyKey Keyboard
- Microsoft Mouse
- New MS DOS 5.0
- MS Windows 3.0

\$1795

25MHz 386 VGA

- Intel 80386 Processor
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124 Key AnyKey Keyboard
- Microsoft Mouse
- New MS DOS 5.0
- MS Windows 3.0

\$1995

BEST BUYS

- Get our 33 MHz 386 Cache system, same configuration as listed, with a 120 MB IDE hard drive instead of the 200 MB drive.

\$2395

- Same features as our 33 MHz 486 Cache system except this machine has 4 MB RAM, instead of 8, and a 120 MB IDE hard drive, instead of the 200 MB drive in our standard configuration.

\$2845

33MHz 386 CACHE

- Intel 80386 Processor
- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124 Key AnyKey Keyboard
- Microsoft Mouse
- New MS DOS 5.0
- MS Windows 3.0

\$2695

25MHz 486 CACHE

- Intel 80486 Processor
- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124 Key AnyKey Keyboard
- Microsoft Mouse
- New MS DOS 5.0
- MS Windows 3.0

\$2995

33MHz 486 CACHE

- Intel 80486 Processor
- 64K Cache RAM
- 8 MB RAM, Expands to 64 MB
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124 Key AnyKey Keyboard
- Microsoft Mouse
- New MS DOS 5.0
- MS Windows 3.0

\$3395



The Extras – That Don't Cost Extra At Gateway

- 30-day money-back guarantee
- One-year warranty on parts and labor
- Free bulletin board technical support
- Toll-free technical support for the life of the machine
- Custom 124-key programmable AnyKey keyboard standard with all systems
- Free on-site service to most locations in the nation
- Replacement parts sent via overnight shipping free of charge
- Leasing options for commercial customers
- Non-interlaced color monitors standard with all 386 DX and 486 systems

Due to the volatility of the DRAM market, all prices are subject to change. Prices do not include shipping.

Sales Hours: 7am-10pm Weekdays, 9am-4pm Saturdays (CST)

New Expanded Service Hours: 6am-Midnight Weekdays, 9am-2pm Saturdays (CST)



8 0 0 - 5 2 3 - 2 0 0 0
610 Gateway Drive • N. Sioux City, SD 57049 • 605-232-2000 • Fax 605-232-2023

AnyKey, Intel, Microsoft, MS DOS and Windows are trademarks or registered trademarks of their respective companies. © 1991 Gateway 2000, Inc.





Merger Mania, PC Style

Is the latest wave of mergers, buyouts, and strategic partnerships good for the PC industry—or for PC users?

Capitalism's nemesis, Karl Marx, once observed that history tends to repeat itself—the first time as tragedy, the second time as farce. If you've read the newspapers lately, it might seem the bad old eighties are repeating themselves, with Lotus buying Samna and cc:Mail, AT&T merging with NCR, Ashton-Tate scooping up Interbase and then being devoured by Borland, IBM and Apple entering into an unlikely tryst, and so on. Is this merger mania the new nineties madness, or does it make perfect sense—at least for the companies involved, if not for PC users?

The answer's not as simple or clear as anyone would like. While users almost universally applaud Borland's rescue of the dBASE standard from the arms of a company that seemed incapable of keeping it alive, and while the IBM-Apple cooperative arrangement appears certain to result in a new generation of easy-to-use PCs, user benefit isn't really the rationale behind the majority of these ventures. Instead, hardware and software giants are merging, buying, and dealing in preparation for a battle ahead—a battle to redraw the PC market map for the rest of the decade or longer. Meanwhile, smaller companies are scrambling for cover—and users' choices are getting fewer and fewer.

Why Bigger Is Better

Why is size such an advantage in the era of easy-to-use, powerful computers? For one thing, the technology almost demands it. Despite appearances, graphical PCs are far more complex technically than their character-based predecessors. Old-fashioned, bare-bones PCs handled relatively simple tasks—word processing, spreadsheets, some data base and graphics jobs. At worst, a company had to figure out how to connect those PCs to its “real” computers—its mainframes and minis.

Now, thanks to networking and client-server data bases, graphical PCs *are* the company's real computers. That means businesses can handle mission-critical computing tasks for far less money and with far greater flexibility than ever before—as long as the software cooperates.

IBM, Lotus, Microsoft, and Ashton-Tate have all discovered just how difficult it is to design PC-based software that has the reliability, expandability, and flexibility required of mission-critical systems. If you're going to play in this league, then it makes sense to control as much of the user's software environment as possible. Even relatively elementary stuff, like making sure that two *Windows* applications can share data easily and reliably, turns out to be a bear in practice.

That's why, despite the mix-and-match promise of *Windows* computing, every large software vendor appears de-

termined to line up a word processor, a spreadsheet, a data base, and a graphics package, in addition to whatever other software they're trying to promote. They all claim that their products will work within industry standards—and they will. So if you want to reap the benefits of this next generation of personal computing, then your best bet is a single-vendor solution—or so it might seem.

Is Small Still Beautiful?

Small vendors perform an important service to users and the PC community in general. They nip at the heels of their bigger, slower competitors, providing valuable products that the behemoths simply can't or won't deliver. And they often set daring new standards in power and ease of use. Borland did that in spades with *Paradox* and *Quattro Pro*. In the crush to find personal computing solutions that really work for large and small businesses, users will bear some burden to demand openness and freedom of choice in their next-generation PC hardware and software. The big vendors may try to convince you otherwise. It's a seductive line, but the onus is on them to demonstrate why less choice is better than more.

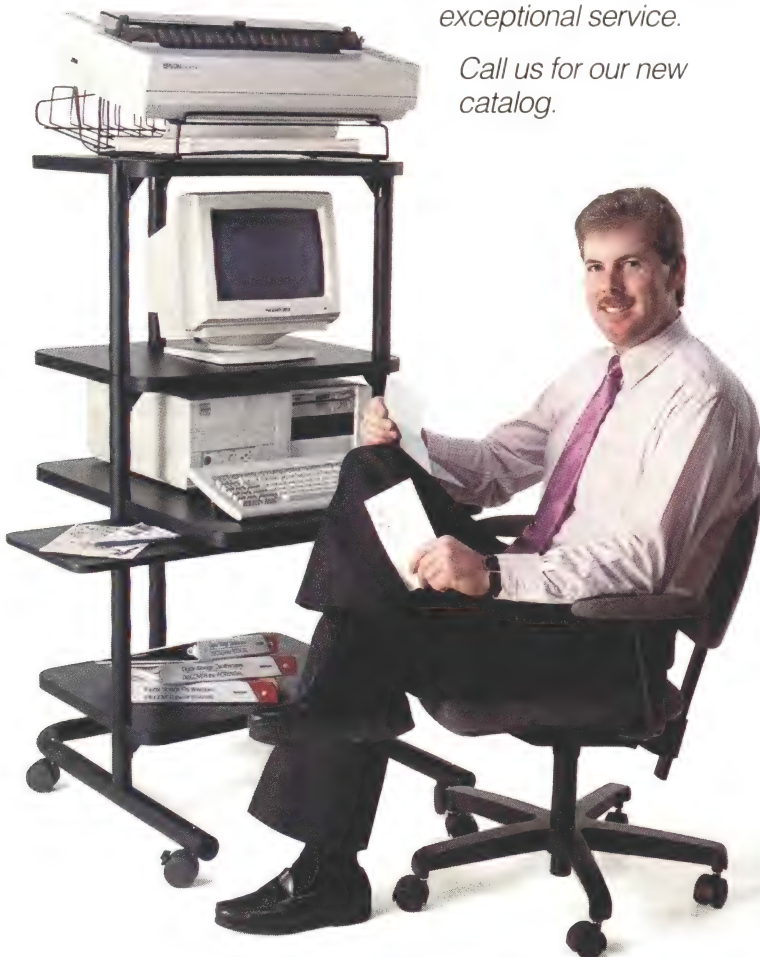
As always, I'm interested in your opinions on this or any other subject. Write to me at *PC World*, 501 Second St. #600, San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685.

AnthroCart®

The best furniture you can buy for your equipment. Incredibly strong. Mobile. Flexible. Space saving. Lifetime warranty.

Choose different sizes and colors. Add the accessories you want. Discover Anthro's exceptional service.

Call us for our new catalog.



Free Catalog:
800-325-3841
6:30 AM to 5:00 PM PST



TechnologyFurniture®

3221 N.W. Yeon St.
Portland, OR 97210
(503) 241-7113
Fax: (503) 241-1619

GSA contract No. GS-00F-5040A
Available for OEM applications
Made in USA
Prices start from \$159
We ship in 48 hours

Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.



RICHARD LANDRY

Jeff Glines, Mr. Infographics

PC World mourns the passing of Jeff Glines, one of the magazine's longest-term employees and, for many of us, its heart and soul. Jeff held down a variety of jobs in his years here at *PC World*; most recently, as design associate, he took on the daunting task of creating charts and graphics that cut through the numerical clutter to reveal the precise information you need to buy smart. He did his job with an intelligence and flair that earned him the affectionate title, "Mr. Infographics." We'll all miss him dearly. ☹

POWER TIP NO. 211

Displaying More Text in Word

It's often handy to view more text on the screen in Word 5.0 using the program's 43- or 50-line modes, but it's difficult to edit such tiny type. Here's a way to have the best of both worlds.

Press <Esc>, move to the 'display mode' field, and press <F1>. Select one of the extended modes using the cursor keys, then press <Enter>. Your screen will now display more than the normal 25 lines of text. How many depends on your display adapter.

To switch between modes, press <Alt>-<F9>. Because Word always switches between the last two display modes you've chosen, you can edit in the easy-to-read 25-line mode, then switch to an extended mode to get the big picture. When you exit and later reload Word, it will start up in the last mode used.

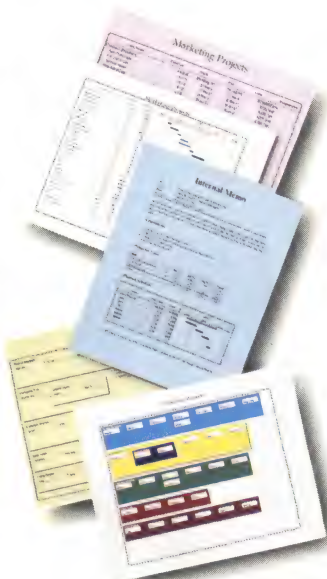
George Campbell
Contributing Editor

— Coming soon to a department under you. —

NIGHT OF THE LIVING DEADLINES.



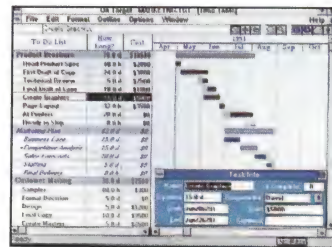
Project Calendar™ presents your schedules in a familiar calendar format—and that's just one of the many On Target reports.



On Target creates a number of different reports. You can also copy graphics into other Windows applications.



With On Target, everyone is clear about their responsibilities—so your team can work together more effectively.



On Target is designed specifically for Windows™ 3.0. Its graphical user interface, familiar spreadsheet format, and full color WYSIWYG graphics make project planning easy.

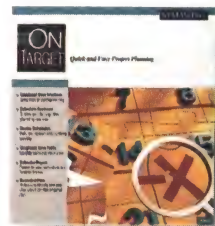
It's 2:30 a.m. Do you know where your projects stand? Now you can avoid those horrifying all-nighters with On Target™—the Windows 3.0 project planner from Symantec.

On Target is the easiest way to keep tabs on virtually all your projects at once. It's the most appropriate way, short of formal "project management," to manage all your schedules and deadlines.

On Target instantly converts your projects into a variety of detailed schedules, charts and graphs. Just enter your schedules into the familiar spreadsheet interface, and choose your own colors, fonts, and display format. On Target does all the rest.

On Target's *Schedule Assistant*™ guides you logically through the planning process. It even comes with *Starter Schedules* to help you start planning right away. So if your workload has become a nightmare, rest easy. It's all in a day's work with On Target.

Call now for a free demo disk.*



1-800-228-4122 Ext. 303-W

SYMANTEC.™

*Demo disk available in US and Canada only. Outside the US, call (408) 253-9600. © 1991 Symantec Corporation. On Target, Project Calendar and Schedule Assistant are trademarks of Symantec Corp. All other products or brand names listed are trademarks or registered trademarks of their respective holders.

Circle 272 on reader service card

Some days you have
all the time in the world.



When the pressure is on, pour on the speed. With Hewlett-Packard's new LaserJet IIISi printer. A powerhouse that delivers at a throughput speed of 17 pages per minute.

With the LaserJet IIISi, you're up to speed the moment you give the "print" command. HP's RISC-based formatter and the PCL5 printer language, with vector graphics and on-the-fly typeface scaling, yield fast

results. This printer also represents a new standard for I/O performance with optional Network Printer Interface cards for either Ethernet or Token Ring.

The LaserJet IIISi is specifically designed for shared-use environments. Its high-volume paper handling features include two 500-sheet input trays and a monthly duty cycle of 50,000 pages. HP offers software-selectable language switching

between PCL5 and optional Adobe® PostScript®. For added versatility, your options include

Adobe and PostScript are registered trademarks of Adobe Systems Inc. in the U.S. and other countries.



And some days you need the new 17ppm LaserJet III Si.



an envelope feeder and two-sided printing.

Beyond speed and efficiency, the LaserJet III Si delivers the sharpest 300 dpi print quality yet. In fact, HP's revolutionary combination of Resolution Enhancement technology and new microfine toner challenges the print quality of many 600 dpi printers.

The price of the new LaserJet III Si, just \$5,495*, is as impressive

as the work load it handles. If you're ready to pick up the pace, call **1-800-752-0900, Ext. 2067** for more information on the fastest LaserJet printer and the name of your nearest authorized HP dealer.

HP Peripherals
When it's important to you.



**HEWLETT
PACKARD**

*Suggested U.S. list price. © 1991 Hewlett-Packard Company PE12101

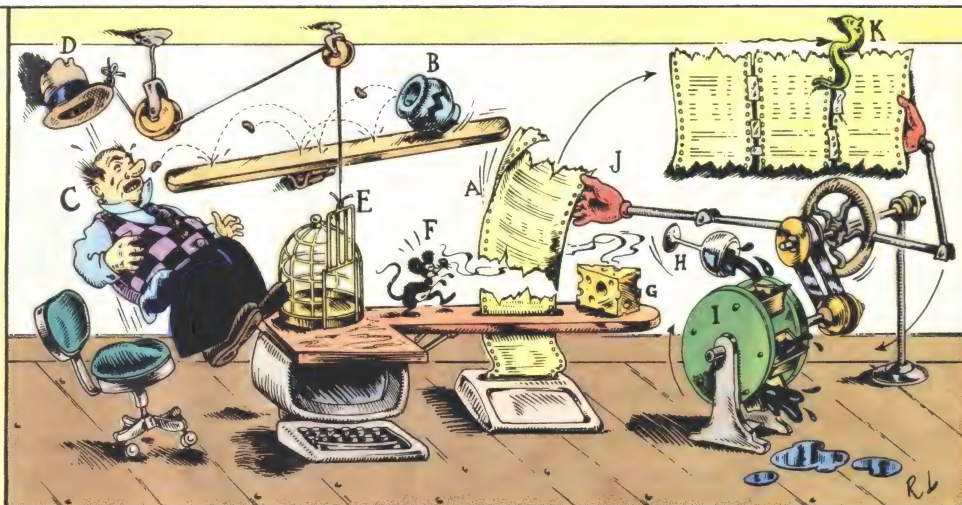
Circle 114 on reader service card

RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBOBULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM (K).



New Sideways takes all the fun out of printing your 1-2-3 spreadsheets.

Introducing new Sideways version 3.3.

What do you do when your spreadsheet's too wide for your printer?

Simple. Just get out your scissors. Get out your stapler. Get out your glue and tape.

Or simpler yet, get Sideways.* It's everyone's favorite way to make high-quality, one-piece printouts with no assembly required.

Nothing's as straightforward as Sideways.

Sideways runs as an add-in to 1-2-3 Releases 2 and 3. As well as Symphony. So printing is fast and easy.

Done creating your spreadsheet? Just pop up Sideways from your 1-2-3 menu, highlight a range and print. With a wide range of printing options.

Mix bold, underlined, and expanded type, all on the same page. Print through or skip over perforations. Add borders, change page size, adjust margins just the way you want. With Sideways, it's simple.

Add just the right twist to your other printing, too.

Sideways is the right way to print with other spreadsheets, too. Like Quattro, Twin, Microsoft Works and LotusWorks. As well as databases, word processors, and project planners.

You get nine different typestyles to choose from. Plus bold, underlined or expanded type. Even foreign language and line drawing characters. If your software can create it, Sideways can print it. All in one piece.

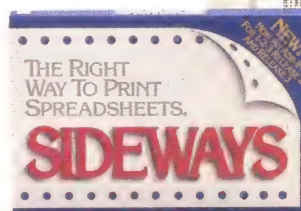
New Sideways version 3.3 for the IBM PC and all popular printers. Available for just \$89.95 at software dealers worldwide, or directly from Funk Software with your check, Visa or MasterCard.

So stop fooling around with your wide spreadsheets. And get down to business with Sideways.

**FUNK
SOFTWARE**

Funk Software, Inc., 222 Third Street, Cambridge, MA 02142

© 1990 Funk Software, Inc. Sideways is a trademark of Funk Software, Inc. Other product names are trademarks of their respective owners. Sideways version 3.3 works with all releases of 1-2-3 as well as other software. Add-in capability requires 1-2-3 Release 2, Release 3, or Symphony.



To order call 1-800-822-3865, Ext. 228
(617-497-6339 in MA)



LETTERS

Reactions and responses from the PC World community



TROY THOMAS

Microsoft's Window of Opportunity

Richard Landry did a great job in his June column airing out the issues around Microsoft's advantage with *Windows* applications. *Windows* developers' complaints are realistic; I'd like to see Microsoft offer them more support. But it seems logical for Microsoft to have come up with a bug-free environment and working applications before offering information to competitors. After all, *Windows* is a Microsoft product. It may seem hurtful to consumers, but as a matter of principle, only Microsoft can decide whether or

not to share. I support industry and consumer pressure on Microsoft, not a court-forced decision.

Leon Fleishman
Long Beach, California

Another Good PC Cause

After reading Richard Landry's May column, with its mention of donating used PCs to worthy causes, I thought I'd write about the nonprofit Himalayan Computer Foundation. Our mission is to preserve Himalayan culture, promote education, establish progressive health care, and protect the region's environment. For our first project, I'm writing a custom *Paradox* application to improve patient tracking for eye hospitals in Nepal, and Borland's Philippe Kahn has donated three PCs to help. Computer technology is an electronic bridge across the chasms of a divided world. If you'd like more information, you can contact me directly at Himalayan Computer Foundation, 745-E Pulehuiki Rd., Kula, HI 96790; 808/878-2714, fax 808/878-2713, MCI Mail Himalaya 433-7582, CompuServe 71521,2043.

Mitchell Silver
President

Keeping 486 Rates Down

Pete Mc Kenney complains about Southern California Gas's use of advanced PC technology in his June letter ["486s: Raising Your Rates?"]. His remarks indicate a lack of understanding of my statements to Alice LaPlante in March ["Pro vs. Con: Are You Ready for a 486?"]. You can't bypass cost-effective technology just because it's new—if you see a way to recoup your investment, you have to go for it. At my company, we've identified a few applications where 486 power is required, and we've

made the appropriate investment. But our current population of 486s is 5 out of more than 2500 PCs. I'd guess our mix of machines is typical of most businesses—maybe even Mr. Mc Kenney's.

Robert D. Holmes
Southern California Gas Company
Los Angeles

Two-Fisted Brutality?

I was surprised to read Rev. Peter E. Loewy's May letter characterizing Mark Marek's *Two-Fisted Management* as brutal. Lighten up, Rev. Loewy! This strip is theater of the absurd at its zenith; it has made me laugh myself to tears. Unfortunately, the abusive Arnold Harris style really exists in many management situations. But humor can be the most effective form of criticism. Maybe a few Arnold Harrises out there will read *Two-Fisted Management* and get the message.

Robert K. Brenneman
Frederick, Maryland

Heavenly Color Dot Matrix Transparencies

Thanks for the information on desktop color in June ["Buyers' Guide: Color Peripherals"]. The printing of my bargain-priced Star NX1020 Rainbow dot matrix printer is heavenly. The *Windows* driver works well with color applications and also provides some interesting monochrome dithering and random and clustered printing. I am even able to print transparencies by removing the roller unit to solve the smearing problem. All I do is place a sheet of paper behind the transparency and keep the film tight to the platen. Folex Film Systems sells the dot matrix transparency film (BG 41). You can reach them at 6 (continues)

ANNOUNCING ... WINFAX PRO



Send and Receive Fax Software for Windows 3

Now you can send and receive faxes *directly* from Windows 3. WINFAX PRO with a popular fax board sends great looking faxes and gives you the convenience and privacy of receiving faxes directly.

Easy to use

Anything Windows can print, you can fax — but with WINFAX PRO, you can send a fax without printing it first. WINFAX PRO installs just like a print driver, so you can simply select "print" from any Windows program to send a WYSIWYG fax. That's all there is to it.

WINFAX PRO lets you combine documents from different Windows applications into a single fax. Select a fax number from the built-in phone book and dial an individual person or an entire group. Choose whether to send the fax immediately, or at a convenient time later. Or, if you'd rather, you can achieve this via built-in DDE.

Crisp, clear & confidential

WINFAX PRO turns any fax machine or PC that receives your faxes into a remote 200 dots-per-inch graphics

printer. Text and graphics are crisp and clear.

What you see on screen is exactly what you fax.

When you receive faxes, WINFAX PRO can work in the background without disturbing you. View your faxes before you print them out, or save them to disk. What's more, your incoming faxes remain *confidential*.

The affordable fax solution

With WINFAX PRO, you don't need expensive high-end fax boards to achieve these results. WINFAX PRO works with most popular fax boards including:

- ▲ All Class 2 (TR29.2) fax modems
- ▲ Intel SatisFAXtion (and other CAS compatible) boards
- ▲ All Sendfax modems (send only)

At just **\$119.95** U.S. (dealers may sell for less), WINFAX PRO is remarkably affordable. And of course, WINFAX is backed by Delrina's **no-risk 60-day money back guarantee**.

For a dealer near you or to find out more call toll-free:

1-800-268-6082



WINFAX PRO

From the makers of PerFORM 2.1 and PerFORM PRO

WINFAX PRO © 1991 Delrina Technology Inc.
All rights reserved. All other product names are registered trademarks or tradenames of their respective owners.

Daniel Road E, Fairfield, NJ 07004;
800/631-1150.

*Pastor Brent Harwerth
Berean Fundamental Church
Ainsworth, Nebraska*

The Good Words Into Print

I just wanted to tell you how much I appreciate George Campbell's *Words Into Print*. It covers areas briefly touched on during word processing training but usually not remembered. Our office made the switch from dedicated word processors to *WordPerfect* just over a year ago, and *Words Into Print* has been a real help. Every month we look forward to the column, and just about everyone here is putting its tips to good use.

*William C. Gile
Leominster, Massachusetts*

Throw That Dog a Bone!

Arnold Beichman complains in June *Letters* about your obvious bias in favor of *WordPerfect*. Your reply about having to be responsive to the majority of your readers is pure pap. The coverage you give to other word processors isn't enough to keep non-*WordPerfect* readers going. If you treated a dog this way, the humane society would be after you for not tossing it a bone often enough to keep it alive.

*David Katz, M.D.
Palm Springs, California*

Fulfill This Promise—Please!

In reaction to Michael S. Vaughn's "Unfulfilled Promises" letter to *Consumer Watch* in June, I say that one mistake doesn't show the whole picture. Northgate messed up in its dealings with Mr. Vaughn, but they also made amends. Show me another company that would reimburse credit card interest charges and phone costs. Northgate is a cut above everyone else I've dealt with in terms of service, and they've earned their customers' loyalty.

*Loren Rose
Sepulveda, California
(continues)*

Before you run out and spend four or five thousand dollars for a 386SX notebook PC, we seriously suggest you take a close look at Samsung.

We designed our NoteMaster™ 386S/16 to have the performance features most people need at a substantially lower price than the Compaq LTE 386/20.

NoteMaster has a better screen, a more responsive keyboard and can be upgraded with a coprocessor, modem or more memory without even opening up the case. It's also slimmer and lighter than Compaq. And it comes with our toll-free customer service hotline so you get answers directly from our product experts. As one of the world's largest manufacturers, we make most of our own components, so you realize considerable savings with superior quality control.

Call 1-800-624-8999, extension 85R for more information or the name of your nearest dealer.

You'll discover you can own the best without paying the most.

	Samsung NoteMaster 386S/16	Compaq LTE 386/20
Processor	16MHz 386SX	20MHz 386SX
Dimensions	8.5" x 11" x 2.1" 7 lbs.	8.5" x 11" x 2.2" 7.5 lbs.
Display	VGA Sidelit CCFT Paper White VGA LCD 256KB Video RAM 64 grey shades support	VGA Edgelit LCD 16 grey shades support
Keyboard	Standard AT-compatible 3mm key travel depth	Enhanced keyboard 2.5mm key travel depth
Memory	1MB expandable to 5MB	2MB expandable to 10MB
Software Incl.	Laplink III MS-DOS Windows 3.0	Not included
Support	Toll-free 800 number On-line modem support	Toll-free 800 number
Price	20MB - \$2799 40MB - \$3099	30MB - \$4399 60MB - \$4999

Lower your budget not your expectations.



Technology that works for life.

All brand and product names are Trademarks or Registered Trademarks of their respective companies. Copyright 1991 Samsung Information Systems America, Inc.

Circle 251 on reader service card

Protected Publisher

As a loyal longtime owner of *Ventura Publisher*, I must call attention to a serious omission in your "Face-Off: Page-Maker vs. Ventura" in June. The *Windows* version of *Ventura* is crippled by an insidious copy-protection scheme, which requires owners connected to a LAN to wait for *Ventura* to check for

every other location where *Ventura* might reside. The program also requires LAN-connected systems to have NETBIOS.EXE loaded in memory, which eats up 29K of valuable RAM. In my opinion, this copy-protection scheme renders *Ventura* nearly unusable.

Dave Hallas
Kansas City, Missouri

Ventura Software replies: *Ventura Publisher* is published without copy protection to allow licensed users to make backup copies. We use the NETBIOS requirement to restrict unlicensed use on networks. Loading NETBIOS requires 2K to 29K of RAM, depending on the network; as *Windows 3.0* runs in high RAM, this requirement doesn't typically crowd *Windows* applications. But in response to customer concerns, we're reevaluating this policy. Increased loading time experienced by this reader may come from the program's reading of WIN.INI for installed fonts. This delay is avoidable; check page A-2 of your manual for details.

Second Look: Backup Software Features

In the *Features Evaluation* for the products in our July 1991 "No-Sweat Backup Software" review, a production error resulted in switched product headings. The corrected table is on page 32. Apologies to our readers, Central Point Software, Fifth Generation Systems, Symantec, and Westlake Data!—Ed.

Corrections and Clarifications

"Paradox Picture Formatting" in May *User Group Tips* capitalizes the first letter of only the first word in a field. To capitalize the first letter of every word in a field, *View* your table and place the cursor on the field you want to format. Press <F9> to edit, then <F10>. Select *Valcheck Define* and press <Enter>. Select *Picture*, type *{!}*?[, and press <Enter> <F2>. If you want to capitalize only the first letter of the first word in the field, omit the space between the brackets.

In "DOS Does It Right" (July), the correct fax number for the Microsoft Corporation is 206/883-8101. In our July Buyers' Guide "Powerhouse Utilities for Under \$50," the correct telephone number for Berkeley Systems, Inc., which makes *After Dark* for *Windows 1.0*, is (continues)

4 Great Reasons To Add Fax To Your Laser Printer

1

Plain Paper Quality—Fast

With JetFax, get your faxes on plain bond paper at your laser printer, fast. No more curled thermal paper!

2

Easy PC Faxing

Send PC files as faxes from within your application. No fax boards.

3

Efficient Network Faxing

JetFax provides low-cost faxing capability to LAN or switchbox users. No dedicated servers!

4

Money Savings

JetFax is inexpensive. So is plain paper. Save big on thermal paper and copying costs!

Call Today:

1-800-7JETFAX

Jetfax II

Jetfax, Inc.

Tel. 415-324-0600 Fax: 415-326-6003

Prices are suggested list price. JetFax is a registered trademark of JetFax, Inc. LaserJet is a registered trademark of Hewlett-Packard Company.



More Great Reasons

Feature	JetFax II	HP LaserJet FAX
Laser-printed faxes	Yes	Yes
PC faxing	Yes, Multi-user	Yes, Single-user
from within application?	Yes	No
network compatible?	Yes	No
Standard memory	60 pages	13 pages
Maximum memory	240 pages	70 pages
Warranty	2 years	1 year
Price	\$995	\$1895

Circle 118 on reader service card

There's only one word processor that's as easy to pick up as ours.



Forget everything you've heard about word processing software.

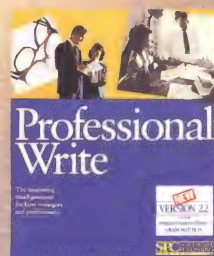
That the software takes too much time to learn. That they have all sorts of features you'll never use. That it's a lot easier to pick up a pen and start writing.

Professional Write® from Software Publishing Corporation can do everything from a simple memo to a complex report. Yet all you do to start using Professional Write is to turn it on. You don't need

to spend hours poring over manuals or sitting in classes. And, there are simple on-screen menus to take you from start to finish.

Professional Write wasn't just named for professionals, it was designed for professionals. No wonder it's the best-rated, best-selling executive word processing software.

What proof? Put down your pen and call.

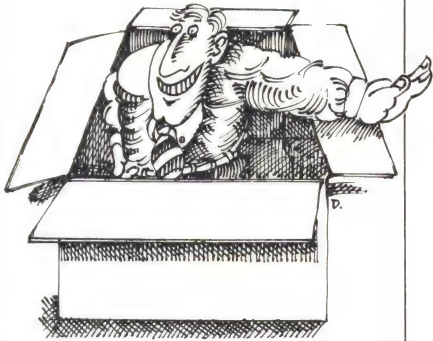


SPC SOFTWARE PUBLISHING CORPORATION

For a free Professional Write 2.2 trial disk, call 1-800-336-8360, Operator 580.

Runs on IBM PC and MS-DOS compatibles. Professional Write is a registered trademark of Software Publishing Corporation. ©1991 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210.

AccountMate.



Great Out-of-the-Box, Yet Won't Box You In.

Ready to Use, Ready to Change

AccountMate accounting software is so comprehensive and easy to use, you can start processing accounts receivable, generating reports, or managing inventory the very day you install it. Depending on your needs, you can buy one or all of AccountMate's modules, including General Ledger, Accounts Receivable and Payroll.

In time, your business will change and grow. AccountMate lets you add new screens, generate customized reports, or put your "stamp" on an invoice.

With modifiable AccountMate, you can:

- **Save Money** You don't pay the price of new or wholly customized software as you grow.
- **Save Time** Because you can "block out" features you don't use and add ones you need, you eliminate unnecessary screens and keystrokes.
- **Gain Control** Whenever your business changes, AccountMate changes with you!

Don't get boxed in by your accounting software. Call SourceMate for the authorized AccountMate reseller nearest you. Ask about our free Introductory Disk: **1-800-877-8896**. International: 415-381-1011. Fax: 415-381-6902.

SourceMate

20 Sunnyside Ave./Mill Valley
California 94941-1928

*AccountMate is available in MS DOS, LAN, and single or multi-user formats.

FEATURES EVALUATION

Norton, Central Point: Safe Bets

You can trust your data to our two Best Buys. Both excel at data security and provide solid backup and restore features.

- Yes
- No
- ◐ Deficient

Standard features

	Central Point Backup 6.0	Fastback Plus 2.11	Norton Backup 1.2	PC-Fullbak+ 2.01
List price	\$99	\$189	\$149	\$99
RAM required	512K	330K	512K	512K
Multiple user levels	●	●	●	◐ ²
Scripts	●	●	●	●
Macros	◐ ³	●	●	○
Context-sensitive help	●	●	●	●
Mouse support	●	◐ ⁴	●	○

Data security

Restores from damaged disk	●	◐ ⁵	●	◐ ⁵
Restores from incomplete backup set	●	●	●	●
Compares backup with original	●	●	●	●
Warns before overwriting disk	●	●	●	●
Can warn against replacing newer file	●	●	●	●
Ignores hidden files	●	●	●	●
Can password-protect backup sets	●	●	●	○

Backup options

Select directories/files from tree display	●	●	●	●
Select files by wild card	●	●	●	◐ ⁶
Select files by date range	●	●	●	●
Select files by attribute	●	○	●	○
File list shows size, date, and time	◐	○	●	●
Estimates time/number of disks required	●	●	●	●
Data compression	●	●	●	●
Multiple drives in same backup	◐ ⁷	○	●	◐ ⁷
Appends incremental backup to same disk	●	○	●	●
Differential backup	●	●	●	◐ ⁸
Formats disks during backup	●	●	●	●
Backs up to any logical drive	●	●	●	●
Backs up to tape drive	●	○	◐	◐ ⁹

Restore options

Restore files to different directory	●	●	●	○
Restore subdirectories under new name	●	○	●	○
Select directories/files from tree display	●	●	●	●
Select files by wild card	●	●	●	◐ ⁶
Select files by date	●	●	●	◐ ⁶
	BEST BUY		BEST BUY	

¹ Norton Backup 1.0 won a Best Buy in July 1990.

² Beginner version is a separate program.

³ Available with PC Tools Deluxe.

⁴ Simulates keyboard cursor keys.

⁵ Could not always restore from damaged disk.

⁶ From DOS command line only.

⁷ Can be appended to same backup set but requires separate backup steps.

⁸ Not available as a single menu option; requires multiple settings.

⁹ Does not support standard QIC-40 or QIC-80 drives, only select drives from Wang, Everex, ComputerLand, Archive, and Maynard.

Rock Solid OCR

OmniPage Professional



Eight out of ten businesses chose *OmniPage*® for their OmniFont OCR. So we developed *OmniPage* Professional, to meet the needs of the other two.

As with *OmniPage*, you can still scan virtually any document, no matter what font, font size or column format – and accurately enter it into any PC compatible or Macintosh® file. All at impressive speeds of up to 2000 wpm (words per minute) in powerful 486 systems. You still have all the power of *OmniPage*'s AnyFont™ technology, which is the world's most accurate OCR software.

According to *InfoWorld*: "Accuracy is the most important feature of an OCR package. . . *OmniPage* was the most accurate program we tested."

And now with *OmniPage* Professional you have something not found in any other OCR software – including *OmniPage* – complete *customizability*.

The new Custom Characters feature, for example, lets you learn special characters unique to your business or profession; including logo type, stylized fonts, scientific or mathematical symbols – even difficult to read shapes like α, ®, ☞, ~, @ and ↵, as well as broken or smudged characters.

OmniPage Professional includes the world's only dedicated OCR spellchecker which lets you go beyond 100% page recognition, correcting errors even in the source text.

Add to all of this Deferred Processing, or the ability to scan now and recognize

later, and *OmniPage* Professional delivers not only the world's fastest and most accurate OCR solution, but the most *customizable* as well.

Visit an authorized Caere dealer today and see for yourself how *OmniPage* Professional can help you to eliminate unnecessary keystrokes – forever. *OmniPage* Professional, only from Caere, the Complete Recognition Company.



Caere Corporation
100 Cooper Court
Los Gatos, CA 95030
1-800-535-SCAN



All ®registermarks and ™trademarks are of their respective companies. ©1990 Caere Corporation.



If there were a printer that could give you this kind of color

Do your presentations go in one eye and out the other? The Colormate™ PS 40 can easily and affordably give them the impact they deserve. Enhancing your work with truly amazing color, from brilliant primaries to soft pastels.

The Colormate PS 40 integrates readily with any network, PC or Mac. And it's compatible with most popular presentation software. Of course, Adobe® PostScript® is standard, so you can scale, rotate and shade the 17 resident fonts. 300 DPI graphics means that output is



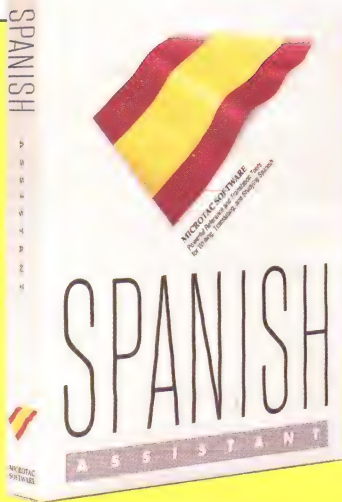
Would you still make your presentations in black and white?

Sharp and clear, whether paper or transparencies. And with its small footprint, the Colormate PS 40 won't fill up your desk. After all, the world isn't black and white, why should your presentations be? For your free Color Presentations Guide, call 1-800-NEC-INFO.



NEC

Circle 187 on reader service card



Your Passport To Translation.

Translating text is fast and easy with the Language Assistant Series: Spanish Assistant, French Assistant, German Assistant and Italian Assistant.

The Language Assistants translate simple English documents by analyzing individual sentences. They translate words, search for phrases, conjugate verbs, provide gender and number agreement, and work with word order.

The Language Assistants also include on-line bilingual dictionaries, grammar help topics, and a verb conjugator.

A Great Deal In Any Language!

- ▶ Helps you translate and write while improving your foreign language skills
- ▶ Pop up help with powerful reference tools
- ▶ Easily add foreign and accented characters
- ▶ Includes integrated ASCII text editor

Only \$79.95—Order Now!

Give your PC bilingual power with Spanish Assistant, French Assistant, German Assistant or Italian Assistant. Order your copy today! 30-day money-back guarantee.

See Your Software Dealer Or Call (800) 366-4170.



MICROTAC SOFTWARE

4655 Cass St., Suite 214, San Diego, CA 92109
Phone: (619) 272-5700 • Fax: (619) 272-9734

Circle 157 on reader service card

PC WORLD PC WORLD PC WORLD

BACK ISSUES

Is your PC World library complete? Or are you missing a few vital issues? Now's your chance to fill in the gaps with back issues of PC World — the best source for computing productivity. Each issue is available for \$6 per copy, while supplies last, including surface delivery via UPS. For orders of 12 or more issues, you pay just \$2.95 per copy.

For airmail delivery in the U.S. and Canada, please add \$6 per copy. For all other countries, back issues are \$20 per copy, including airmail delivery. Prepayment is required in U.S. dollars.

Simply enclose payment, specify the issues and quantities desired and send to:

PC World
Back Issue Department,
144 Townsend Street,
San Francisco, CA 94107

Sorry, credit card orders cannot be accepted.
For Express Service call 1-800-395-5763.



800/877-5535. We regret any inconvenience these typographical errors may have caused.

Send your reactions, responses, and ideas to Letters, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Include your name, city, state, and phone number. We reserve the right to edit letters. ☉

POWER TIP NO. 201

@EXCH Puts Harvard Graphics Charts in Order

The next time a set of bars gets hidden from view in one of your 3-D overlapping-graph charts, try using the @EXCH calculation. It swaps the contents of two series to bring the smaller values up front. It can also reorder your series from smallest to largest or the other way around. This makes a chart, particularly a bar or area chart, explicit about who or what is on top (or at the bottom) and how all the others fall in line.

To use @EXCH, put the cursor somewhere in one of the two series to swap, press <F6> in version 2.3 (or <F4> in prior releases), move the cursor to the 'Calculation' prompt, and type @EXCH(#x). In place of x, type the number of the second series in the pair. The two series will switch instantly. If necessary, repeat the process for other sets of two series until the chart is meaningfully rearranged. Your audience will love you for it.

Steve Sagman
New York, New York

NEW

Borland ranked best Quattro Pro beats Lotus 1-2-3

Two recent industry studies objectively confirm the facts: Customers rank Borland best among software companies, and Quattro® Pro outperforms *all* Lotus® spreadsheets.

Borland: The technology leader.

Buying software shouldn't be an act of blind faith. Before purchasing your next spreadsheet, take a hard look at the company behind it. Bigger is not better!

Because Borland is smaller than our competitor, we work smarter, we try harder, and it's paying off: Borland was just ranked "Best Application Software in Customer Satisfaction, in Small and Medium Sized Businesses," in the prestigious J.D. Power and Associates survey. Who would you rather buy your next spreadsheet from?

Just check out the *InfoWorld* review results below. Quattro Pro wins in comparison to Lotus 1-2-3® hands down in *InfoWorld* and with more than 1,000,000 enthusiastic users.

	Quattro Pro	Lotus 1-2-3	
Number of ...	3.0	v. 2.3	v. 3.1
"Excellent"	7	2	3
"Very Good"	8	4	5
"Good"	0	5	4
"Satisfactory"	2	5	3
"Poor"	0	1	1
Overall score	8.4	6.3	6.5

REPORT CARD		INFO WORLD
SPREADSHEET SOFTWARE Quattro Pro VERSION 3.0		
Criterion	(Weighting)	Score
Performance		
Formulas/analysis	(100)	Very Good
Compatibility	(50)	Very Good
Speed	(75)	Very Good
Database	(75)	Excellent
Graphics	(75)	Excellent
Output	(50)	Excellent
Macros	(50)	Very Good
Consolidation/linking	(50)	Excellent
Capacity	(50)	Very Good
Network	(50)	Satisfactory
Documentation		
	(75)	Excellent
Ease of learning		
	(50)	Excellent
Ease of use		
	(100)	Very Good
Error handling		
	(50)	Very Good
Support		
Support policies	(25)	Very Good
Technical support	(25)	Satisfactory
Value		
	(100)	Excellent
Final score		8.4

We don't blame Lotus for trying to underplay ratings such as these, but clearly Quattro Pro is more powerful. It has better graphics, better capacity, better macros, better consolidation and linking, and much more!

Borland and Quattro Pro: The obvious choice.

Company for company, product for product, the choice is clear. Join more than a million users and upgrade to Borland's Quattro Pro today! If you own any version of Lotus 1-2-3, for only \$129⁹⁵ we'll rush you your own copy of the best spreadsheet from the best company.

See your dealer or call 1-800-331-0877 now!

J.D. POWER AND ASSOCIATES

APPLICATION SOFTWARE
CUSTOMER SATISFACTION INDEXSM

June 6, 1991

1. BORLAND

2. WORD PERFECT

3. CLARIS

4. ALDUS

5. MICROSOFT

6. LOTUS

Quattro Pro: The standard of excellence.

InfoWorld reviews confirm what more than one million PC users already know: Quattro Pro is the best DOS spreadsheet that money can buy. Better than *any* Lotus spreadsheet including their recently released version 2.3.



B O R L A N D

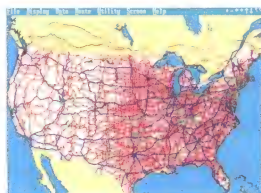
Software Craftsmanship

CODE: MJ09

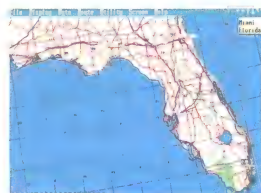
1991 J.D. Power and Associates Computer End User Satisfaction Study: Phase I. Office Based Small to Medium Sized BusinessesSM Response from Business End Users at 1,784 business sites. Small to medium sized businesses were based on office sites with between 1 and 499 employees. J.D. Power and Associates is a service mark of J.D. Power and Associates. Borland is a registered trademark of Borland International, Inc. Copyright © 1991 Borland International, Inc. All rights reserved. Quattro is a registered trademark of Borland International, Inc. Pricing is in U.S. dollars. Offer good in U.S. and Canada only. Dealer prices may vary. BI 1429

AUTOMAP™

The Intelligent
ROAD ATLAS™



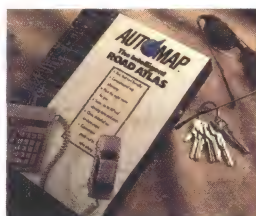
The fun, fast, friendly way to know before you go. Full color maps help you plan your best route. Accurate, current and reliable data.



AUTOMAP's powerful intelligence searches over 350,000 miles of road and more than 50,000 cities.

Distance route from Miami to New Orleans				
Time 13 hrs 56 min Distance 885 miles				
Time	From	To	Distance	Time
00:00	MIAMI	MIAMI	0 miles	00:00
00:15	MIAMI	MIAMI	0 miles	00:15
00:30	MIAMI	MIAMI	0 miles	00:30
00:45	MIAMI	MIAMI	0 miles	00:45
01:00	MIAMI	MIAMI	0 miles	01:00
01:15	MIAMI	MIAMI	0 miles	01:15
01:30	MIAMI	MIAMI	0 miles	01:30
01:45	MIAMI	MIAMI	0 miles	01:45
02:00	MIAMI	MIAMI	0 miles	02:00
02:15	MIAMI	MIAMI	0 miles	02:15
02:30	MIAMI	MIAMI	0 miles	02:30
02:45	MIAMI	MIAMI	0 miles	02:45
03:00	MIAMI	MIAMI	0 miles	03:00
03:15	MIAMI	MIAMI	0 miles	03:15
03:30	MIAMI	MIAMI	0 miles	03:30
03:45	MIAMI	MIAMI	0 miles	03:45
04:00	MIAMI	MIAMI	0 miles	04:00
04:15	MIAMI	MIAMI	0 miles	04:15
04:30	MIAMI	MIAMI	0 miles	04:30
04:45	MIAMI	MIAMI	0 miles	04:45
05:00	MIAMI	MIAMI	0 miles	05:00
05:15	MIAMI	MIAMI	0 miles	05:15
05:30	MIAMI	MIAMI	0 miles	05:30
05:45	MIAMI	MIAMI	0 miles	05:45
06:00	MIAMI	MIAMI	0 miles	06:00
06:15	MIAMI	MIAMI	0 miles	06:15
06:30	MIAMI	MIAMI	0 miles	06:30
06:45	MIAMI	MIAMI	0 miles	06:45
07:00	MIAMI	MIAMI	0 miles	07:00
07:15	MIAMI	MIAMI	0 miles	07:15
07:30	MIAMI	MIAMI	0 miles	07:30
07:45	MIAMI	MIAMI	0 miles	07:45
08:00	MIAMI	MIAMI	0 miles	08:00
08:15	MIAMI	MIAMI	0 miles	08:15
08:30	MIAMI	MIAMI	0 miles	08:30
08:45	MIAMI	MIAMI	0 miles	08:45
09:00	MIAMI	MIAMI	0 miles	09:00
09:15	MIAMI	MIAMI	0 miles	09:15
09:30	MIAMI	MIAMI	0 miles	09:30
09:45	MIAMI	MIAMI	0 miles	09:45
10:00	MIAMI	MIAMI	0 miles	10:00
10:15	MIAMI	MIAMI	0 miles	10:15
10:30	MIAMI	MIAMI	0 miles	10:30
10:45	MIAMI	MIAMI	0 miles	10:45
11:00	MIAMI	MIAMI	0 miles	11:00
11:15	MIAMI	MIAMI	0 miles	11:15
11:30	MIAMI	MIAMI	0 miles	11:30
11:45	MIAMI	MIAMI	0 miles	11:45
12:00	MIAMI	MIAMI	0 miles	12:00
12:15	MIAMI	MIAMI	0 miles	12:15
12:30	MIAMI	MIAMI	0 miles	12:30
12:45	MIAMI	MIAMI	0 miles	12:45
13:00	MIAMI	MIAMI	0 miles	13:00
13:15	MIAMI	MIAMI	0 miles	13:15
13:30	MIAMI	MIAMI	0 miles	13:30
13:45	MIAMI	MIAMI	0 miles	13:45
14:00	MIAMI	MIAMI	0 miles	14:00
14:15	MIAMI	MIAMI	0 miles	14:15
14:30	MIAMI	MIAMI	0 miles	14:30
14:45	MIAMI	MIAMI	0 miles	14:45
15:00	MIAMI	MIAMI	0 miles	15:00
15:15	MIAMI	MIAMI	0 miles	15:15
15:30	MIAMI	MIAMI	0 miles	15:30
15:45	MIAMI	MIAMI	0 miles	15:45
16:00	MIAMI	MIAMI	0 miles	16:00
16:15	MIAMI	MIAMI	0 miles	16:15
16:30	MIAMI	MIAMI	0 miles	16:30
16:45	MIAMI	MIAMI	0 miles	16:45
17:00	MIAMI	MIAMI	0 miles	17:00
17:15	MIAMI	MIAMI	0 miles	17:15
17:30	MIAMI	MIAMI	0 miles	17:30
17:45	MIAMI	MIAMI	0 miles	17:45
18:00	MIAMI	MIAMI	0 miles	18:00
18:15	MIAMI	MIAMI	0 miles	18:15
18:30	MIAMI	MIAMI	0 miles	18:30
18:45	MIAMI	MIAMI	0 miles	18:45
19:00	MIAMI	MIAMI	0 miles	19:00
19:15	MIAMI	MIAMI	0 miles	19:15
19:30	MIAMI	MIAMI	0 miles	19:30
19:45	MIAMI	MIAMI	0 miles	19:45
20:00	MIAMI	MIAMI	0 miles	20:00
20:15	MIAMI	MIAMI	0 miles	20:15
20:30	MIAMI	MIAMI	0 miles	20:30
20:45	MIAMI	MIAMI	0 miles	20:45
21:00	MIAMI	MIAMI	0 miles	21:00
21:15	MIAMI	MIAMI	0 miles	21:15
21:30	MIAMI	MIAMI	0 miles	21:30
21:45	MIAMI	MIAMI	0 miles	21:45
22:00	MIAMI	MIAMI	0 miles	22:00
22:15	MIAMI	MIAMI	0 miles	22:15
22:30	MIAMI	MIAMI	0 miles	22:30
22:45	MIAMI	MIAMI	0 miles	22:45
23:00	MIAMI	MIAMI	0 miles	23:00
23:15	MIAMI	MIAMI	0 miles	23:15
23:30	MIAMI	MIAMI	0 miles	23:30
23:45	MIAMI	MIAMI	0 miles	23:45
24:00	MIAMI	MIAMI	0 miles	24:00

Print out detailed maps and directions to take along with you. AUTOMAP can easily save up to 20% in driving time and costs.



Only **\$99⁹⁵** Order Now

See your Software Dealer or call
1-800-545-6626

AUTOMAP Inc.

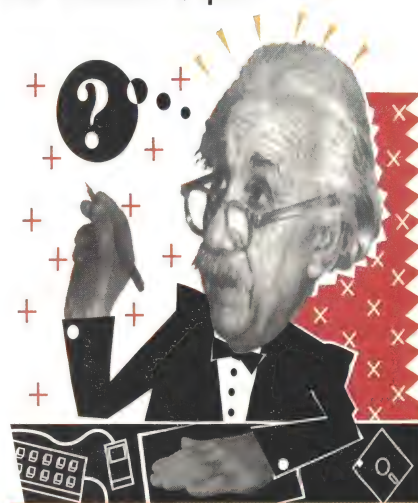
9831 S. 51st St • Building C-113 • Phoenix, AZ 85044
Telephone 602 893-2400 • Telefax 602 893 2042

Circle 12 on reader service card

Windows Quiz Answers

Here are the answers to July's *Rate Your Windows IQ* quiz.

In determining correct entries, we disregarded question 9, which didn't offer the correct answer of 50 percent. We also threw out question 12, because the Recorder can paste in *some* commands to a DOS program from the Clipboard. We hope you enjoyed the challenge; remember to keep your eyes open for more quizzes and prizes in upcoming issues.



- 1) **D. All of the above** (*run=123.exe, run=123.pif, and run=123*) WIN.INI commands automatically open 1-2-3 when you start Windows.
- 2) **C. UAE** stands for **Unrecoverable Application Error**.
- 3) **C. <Alt>-<Enter>** is the keyboard command that toggles DOS applications between full-screen and windowed displays under 386 enhanced mode.
- 4) **A. File backup** is not included in a bundled Windows 3.0 utility.
- 5) **C.** If you set up a permanent swap file, as opposed to using the temporary one, you ensure that Windows will swap to disk as fast as possible under **386 enhanced mode**.
- 6) **D.** Virtual memory is **a technique that uses the hard disk to simulate additional system memory**.
- 7) **B.** To ensure that a temporary Windows swap file doesn't eat up every last byte of available disk space, you should include **MinUserDiskSpace = 1024** in the [386Enh] section of SYSTEM.INI. (Actually, the line isn't absolutely necessary;

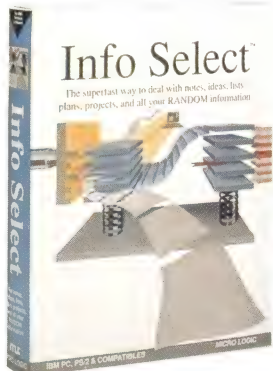
Windows leaves 512K of disk space free if the MinUserDiskSpace line is absent.)

- 8) **C.** RAMDrive speeds up Windows performance when used to hold **application "temp" files**.
- 9) In 386 enhanced mode, if only two windowed DOS applications are running in the background, each using a PIF file background priority setting of 25, another DOS program with a foreground priority of 100 will receive 50 percent of processor time when running in the foreground. (Windows itself has a default background setting of 50; thus the base is 50+25+25+100, or 200; and 100 is 50 percent of 200.)
- 10) **B. \$208** is the highest possible Solitaire score for a single game using Vegas scoring.
- 11) **C.** The SmartDrive CONFIG.SYS command **DEVICE = SMARTDRV.SYS 1024 256** means **create a 1024K disk cache for use with DOS programs, and reduce the disk cache to 256K when Windows starts**. (Actually, Windows doesn't reduce an extended memory disk cache immediately—only when it needs more memory for applications.)
- 12) Windows' Recorder macro utility can't be used to issue *all* of a DOS program's commands.

How this \$149 software will:

- 1) Improve the way you work and think,
- 2) Instantly find the info you need, and
- 3) Help you make brilliant decisions ...

Surprisingly, there is a whole new world of uses for your computer! You can use your computer to deal with all the countless bits of "random" information scattered across your desk: plans, notes, lists, actions, contacts, ideas,



Are you forgetful?

Were you born with a memory situated squarely on the tip of your tongue? Do you forget things like which day you placed an order or important numbers? If you are forgetful you especially need INFO SELECT - the software that remembers almost everything for you.

Thinking tool

Have you ever worked on a complex project and felt lost? With INFO SELECT you'll group, scan, and cross search through all your notes so fast you'll see the big picture in seconds.

Will I be better off doing this now or that later? Keeping priorities straight can make or break your career or your business. INFO SELECT lets you keep on top of what's hot.

Should you use an east or west coast supplier? To make decisions you need facts. Now you can view the facts any way you like ... as fast as you can think. You'll make the best decisions ever -- and fewer expensive mistakes.

and much more. INFO SELECT™ will not only give you instant access to this important information ... it will help you make better decisions and see important new relationships. Try INFO SELECT risk-free and discover a whole new dimension of computing.

Photographic memory

INFO SELECT is like having a 'photographic memory' that gives you perfect superfast recall of up to 64,000 items of information.

Telephone notes

When Harry calls you on the phone, you'll display the six windows on Harry before he finishes his first sentence! No more embarrassing pauses or scrambling for information.



INFO SELECT is easy to use - yet powerful.

INFO SELECT also includes the world's first "3-D" word processor. You'll be amazed at how it works.

Instead of one window or ten, imagine up to 64,000! The uses are endless.



Phone notes



Client info



Decisions



Management

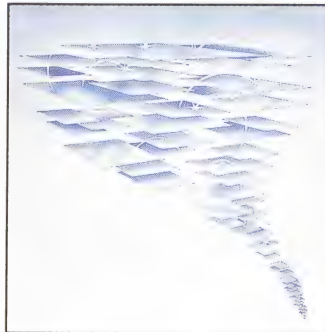
The #1 PIM

What's all the fuss about PIMs (Personal Information Managers)?

Simple - you probably have more RANDOM information than any other type and you need a PIM to properly handle this kind of information. The right PIM will save you time and make everything you do go smoothly.

Why is Info Select the #1 PIM? Because Info Select is based on ideas you can identify with - like stacks of paper. And it's free-form too. You

won't waste days or weeks learning complex structures. Instead you'll be up and running in minutes. Info Select also does more and costs less than other PIMs.



Owners of our TORNADO software (symbolized by the famous "blue tornado") can trade up to the second-generation Info Select under our special offer. There are over 200 improvements.

Feature packed

INFO SELECT is memory resident (if you choose), so you can quickly jump in from other programs. Info Select windows can hold: notes, plans, lists, facts, letters, contacts, and much more. You can search for a window or a group of windows related by a word or phrase. There are five ways to see overviews; hypertext, a fast sort, and line drawing. Save time with the dialer, date tickler; and searching by text or date ranges.

Info Select allows you to: add columns of numbers; store data in EMS; use template or free-form windows; import and export files, screens, and databases; move, join, and duplicate windows and much more.

LAN option

The new LAN version allows integrated E-mail, sharing company rolodexes and distributing company policies. You can share any kind of information. It's your first step into the exciting new world of groupware! Ask about the five node LAN starter pack.

Easy power

Info Select is easy to use yet offers the power you need with infobases up to 10 megabytes; text searches up to 700kb/sec; up to 32,000 characters per window; and up to 64,000 windows per infobase. Even better, Info Select can swap down to as little as 7K memory!

TORNADO owners

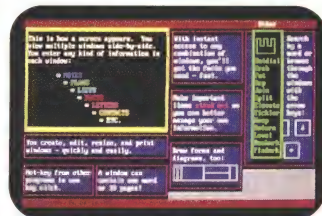
INFO SELECT is based on the pioneering TORNADO™ software PC World called "Excellent, Excellent, Excellent, Excellent" and PC Magazine awarded Editor's Choice - twice. Call about our special trade-up offer.

The next generation of **TORNADO** is here at last!

"the most useful software program I have ever owned!"
Steve Gibson, InfoWorld

Endless uses

Info Select can do much more than manage all your RANDOM information. Use it to manage business correspondence, sales leads, orders, and client notes. Track facts, plan projects, or interrelate all your ideas. You can catalogue parts, documents, and inventory items. Match buyers and sellers or doctors and patients. Setup an information desk. Edit E-mail. Store notes on magazine articles, software operation techniques, or just names and addresses. Whether you are a lawyer tracking court cases or a zoologist collecting feeding habits you'll find countless uses for Info Select.



Info Select keeps your information in intelligent automatically positioned windows.

Risk-Free Guarantee

Info Select is so effective you will be amazed. That's why we offer our money-back guarantee. Try it for 30 days. If you are not fully satisfied, accept our full prompt refund. Could any offer be more fair?

All for just \$149.95! **New: Ver 2.0!**

INFO SELECT has a special price of just \$149.95. You can even try it risk-free with a 30-day money back guarantee. But hurry - this is a limited time offer.

Doesn't it make sense to get the software package that can open up a whole new world of important uses for your computer? Order today. Call toll-free:

(800)342-5930

... and get ready for a new dimension of computing.

MicroLogic

POB 70, Dept. 409
Hackensack, NJ 07602
(800) 342-5930 (201) 342-6518
Fax: (201) 342-0370

Makers of: Tornado, Info Select, Key Watch & Micro Charts

Computer Shopper David Harvey "Rarely do I recommend a product as wholeheartedly" David Harvey, Comp. Shopper	PCM Jeffrey Parker, PCM "Beats the pants off just about everything else."	INFO WORLD Patrick Marshall, Info World "As easy as remembering your own name."	PC MAGAZINE Editor's Choice "First rate" PC Magazine
--	--	--	--



This is your m



ext computer.

This is the

Probably the biggest fear in buying a personal computer is that technology will improve right after you buy it. Well, now you have nothing to be afraid of.

Introducing The Tandon Option. Perhaps the last com-

puter you will ever buy. Because The Option not only keeps up with current and future technologies, it creates a whole new technology of its own.

The Tandon Option is a truly modular system. It comes ready to go, with whatever ca-



e after that.

pabilities you now require in your computer. Like a 386SX with 2MB RAM and a 40MB hard drive. But at any time, should you want to increase its capabilities, say to a 486SX with 8MB RAM and a 200MB hard drive, you can easily and

quickly change out modules.

Replace the processor, switch out drives, add memory. You'll not only keep up with the Joneses, you'll probably pass them by.

OPTION
Tandon

How often does it As often



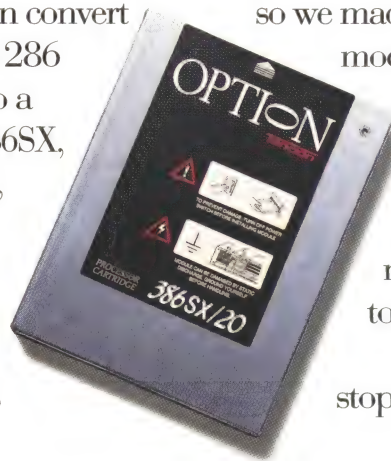
We designed the processor in a cartridge, so in less than a minute you can convert your 286 into a 386SX, 486SX, 486, even a 586, when it debuts.

And you can change processors

as often as you like.

But technology doesn't stop with the processor speed, so we made the hard drive modular as well. And with 40, 80, 110, 200, and 400MB IDE hard drives and beyond, you'll have no shortage of options to choose from.

And it doesn't stop there.



Technology change? you like.

The mainboard will hold up to 32MB of RAM. And because the disk controllers, I/O interface, and VGA ports are built into the mainboard, there are 7 expansion slots available.

Of the 4 drive bays, 3 are ac-

cessible from the front of the computer. And the system has 2 serial ports and one parallel port. All in a compact slimline case.

In other words, The Tandon Option is a system that offers you all the technology of today, and the option of all the technology of tomorrow. But wait, there's more.



OPTION

Tandon

It makes every comp

"Obsolescence is now obsolete," it was said of our new system.

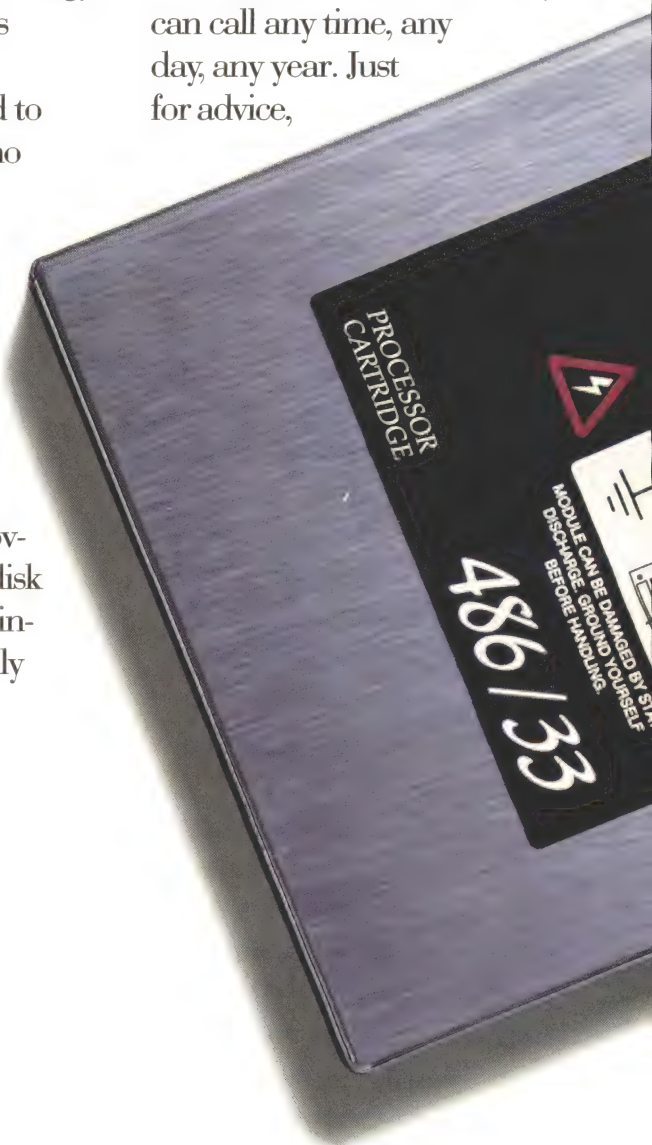
"This is not merely a way to keep up with technology, it is new technology" was also echoed.

You see, as opposed to many in this industry who claim to be technology leaders, at Tandon we have a history of doing a little leading.

We invented and marketed the original 5.25" double sided floppy disk recording head. Developed the first removable and portable hard disk drive. And now this, the introduction of the first truly modular computer.

At Tandon, technology has always come first. But you can also take comfort in the many services we provide for you.

Like a 24 hour hotline you can call any time, any day, any year. Just for advice,



Computer after it, obsolete.

or to help you solve a problem.

Then there's our
on-site service

policy, our 30 day money back,
no questions asked policy, a
1 year limited warranty, and
our willingness to handle most
special requests.

And if all that doesn't
make you feel good, you can
always rejoice in the fact that
your computer will never be-
come obsolete.

The Tandon Option.

It's the original, the sequel,
and a few more after that.

TO ORDER DIRECT OR
FOR YOUR NEAREST DEALER, CALL:

800-800-8850

FAX 805-529-8408

OPTION
Tandon

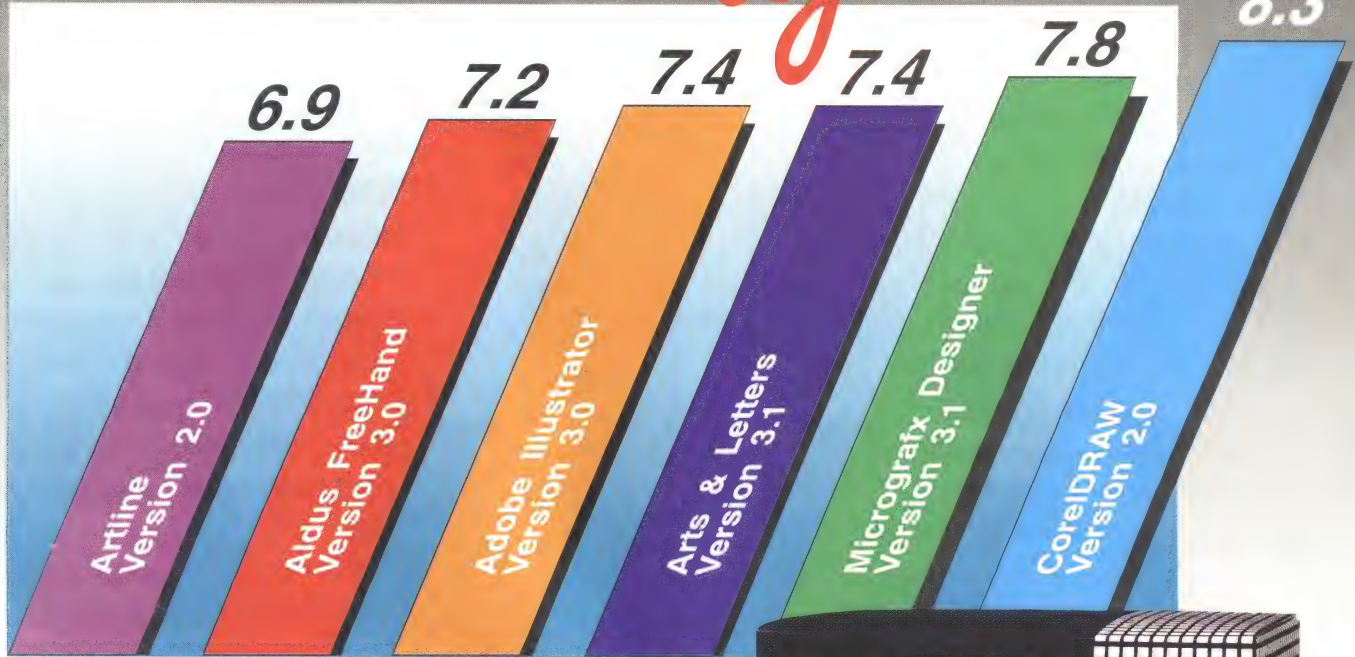
Tandon reserves the right to amend specifications and prices without notice. Tandon 486, Tandon 386, SL386sx, SL 486, LT/286, LT/386sx, 386sx/N, 286/N, Tandon Tower 386, Tandon Tower 486, PowerPoster, MultiCACHE and MIAT are trademarks of Tandon Corporation. Intel is a registered trademark of Intel Corporation. All other products or services are identified by the trademarks or service marks of their respective companies. Lease terms vary by system. ©1991 Tandon Corporation, Moorpark, CA.

Circle 275 on reader service card

PCs beat Macs for Illustration

again!

THE SCORES



InfoWorld Product Comparison June 17, 1991

CorelDRAW wins InfoWorld Evaluation

Yes, CorelDRAW has done it again! In a pivotal InfoWorld product comparison, CorelDRAW, running under Windows 3.0, beat all leading illustration packages — Macs included!

InfoWorld states: "CorelDRAW combines strong ease of use with a top-notch selection of drawing and editing tools...The program has superior typehandling and tracing utilities...CorelDRAW is applicable to the widest range of drawing uses."* Without a doubt, CorelDRAW speaks for itself as the world's finest graphics software!

*Mike Heck, Doug and Denise Green,
InfoWorld June 17, 1991.



Available for Windows, OS/2, CTOS, UNIX and in floppy and CD-ROM formats.

 **COREL**
TEL: (613) 728-8200
FAX: (613) 728-9790

Circle 48 on reader service card



THE HELP SCREEN

PC World offers answers and advice at every level

Print double-sided pages using WordPerfect, skip dBASE IV's title screen, set any point size for Windows' PostScript fonts, fix high-resolution Windows' tiny DOS font, find drive type support, find more hardware interrupts, find a use for your PCjr, turn off your blinking cursor, and use E-mail to link remote office LANs and employees on the road.

Karl Koessel and Robert Lauriston

WordPerfect Double-Sided Printing

Q. *Your February Words Into Print column contained a Microsoft Word macro that allowed users to print only the odd or even pages of a document. Using the macro, you could print your odd pages, flip and reorder them, and then print the even pages on the backs of the odd pages. Is there any way to convert this macro to WordPerfect 5.1?*

*Demerette Kee
Chicago, Illinois*

A. No need to—that capability is built right into the program. On the Print menu, just select *Multiple pages*, then enter **o** to print only the odd pages, or **e** for only the even.

Get Right to Work in dBASE IV

Q. *Is there some way to bypass the Ashton-Tate logo and sign-on screen and go straight to the dBASE IV 1.1 Command Center? Since we use another product for printing labels, we have to enter and exit dBASE many times a day, and the extra step is irritating.*

*Richard Dumont
Serbrooke, Quebec, Canada*

A. It's easy. Just start the program with **dbase /t**. That *'t'* parameter will cause dBASE to take you straight to its main menu.

PostScript Font Sizes in Windows

Q. *Although one of PostScript's major benefits is the ability to use fonts of any size, Windows 3.0 allows only a few sizes to pick from. Is there any way to overcome this limitation?*

*Ralph Spitzer
Vancouver, British Columbia,
Canada*

A. Actually, *Windows* allows you to specify any point size (between 4 and 127 for most applications). If your choice doesn't appear in the size menu, just type it in manually.

The real problem is that *Windows* has screen fonts for only a few point sizes. While type in other sizes is jagged and sometimes unreadable on screen, with a PostScript printer it should still print out correctly. For a closer match between display and printout, install *Adobe Type Manager*. This handy util-

ity generates screen fonts for *Windows* in whatever point size you specify.

WHERE TO BUY

Adobe Type Manager

Adobe Systems, Inc.
P.O. Box 7900
Mountain View, CA 94039-7900
800/344-8335
LIST PRICE: \$99
Reader service no. 683

High-Resolution Windows Demands Larger DOS Font

Q. *My Windows applications look great in high-resolution, 1024 by 768 super-VGA mode on my 14-inch monitor. Unfortunately, Windows uses tiny, unreadable type for DOS applications running in windows. Is there some way to switch to a larger font?*

*John Shahabian
Sacramento, California*

A. *Windows* includes a larger screen font specifically designed for the IBM 8514/A board's 1024 by 768 mode. You can configure your system to use that font by editing your SYSTEM.INI file.

Look in your \WINDOWS\SYSTEM directory and make sure it contains the files 8514OEM.FON and 8514FIX.FON. If you don't see both files, you'll have to copy them from your *Windows* installation disks: First copy EXPAND.EXE from Disk 2 to your C:\WINDOWS directory. Then, if you have 5¼-inch disks, put Disk 1 in drive A:; if you have 3½-inch disks, leave Disk 2 in the drive. Enter the command **expand a:8514*.fon c:\windows\system**, either at the DOS prompt or in the File Run dialog box's command line, to expand the compressed screen-font file and copy it to your hard disk.

(continues)

Now open SYSTEM.INI with Windows' Notepad or Sysedit. Find the lines *oemfont=* under the [boot] section and *cga80woa.fon=* and *ega80woa.fon=* under the [386Enh] section, and edit them to read:

```
oemfont=8514oem.fon
cga80woa.fon=8514fix.fon
ega80woa.fon=8514fix.fon
```

Save the file, then exit and restart Windows. Henceforth, your DOS windows will display in a large, easy-to-read font.

Drive Type Support

Q. I recently purchased a Seagate ST1144A hard disk drive. When I tried to install the drive in my AT clone, I

found it didn't match any of the drive types listed in my system's SETUP program. Do I need a ROM upgrade or is there another solution?

B. G. Grimsley

Farmington, New Mexico

A. Because there's still no industry-wide standard for IDE drives, a new BIOS chip that specifically supports your drive is one solution. An easier way is to use *Disk Manager*, an automatic hard disk configuration and formatting utility. While a copy of that program may have been included with your drive, Seagate upgraded the 1144A and several other IDE drives without upgrading *Disk Manager*. The commercial version of *Disk Manager* now supports the 1144A and most other IDE drives.

The Verdict Is In...



CLARION

PROFESSIONAL DEVELOPER™

Simply the Best.

"We've always liked Clarion's powerful, straightforward language, which has the readability of COBOL or BASIC and the structural integrity of Pascal. And it's more economical than any of these, getting more done in a line of code than virtually any other language...Clarion Professional Developer 2.1 goes beyond these basic strengths."

PC Magazine — Technical Excellence Awards

"Corporate developers and buyers delivered the highest overall score to Clarion Professional."

PC Week — Winner of Corporate DBMS Satisfaction Poll, 1989/1990

"Clarion is the system of choice for the serious applications programmer." InfoWorld

"It is almost easy enough for a novice to use...but programmers will find its editor and full-feature procedural language gives them plenty of room to maneuver."

PC Magazine — Editor's Choice



CLARION SOFTWARE™

150 East Sample Road
Pompano Beach, Florida
(305) 785-4555 • 1-800-354-5444

POWER TIP NO. 202

Using WordPerfect's Equation Editor to Print Large Fonts

You may not have enough memory in your Hewlett-Packard LaserJet-compatible printer to handle large fonts, but you can still use WordPerfect 5.1's equation editor to trick your printer into printing a large font. Use this sequence to get into the equation editor and set the point size for your graphical font: <Alt>-

<F9>ece<Shift>-<F1>gs. Now enter the desired point size, and press <F7> to get back to the equation editing screen. Type the text, then press <F7> twice again to return to the document screen. Now you can preview and print.

Tammy Barton
WordPerfect Technical Support
Orem, Utah

TI microLaser™ printers open new windows.



With powerful fonts and graphics, ease of use and economy.

By now you've heard how fast and easy Microsoft® Windows™ makes it to tap all that PC power you've got on your desk.

Well now there's an affordable, easy way to put that power on paper — microLaser from Texas Instruments.

Right out of the box, microLaser comes with what you need to print the razzle-dazzle pages of text and graphics you've dreamed of creating.

Just plug it in and go.

That's because microLaser PS models come with the Adobe® PostScript® language



POSTSCRIPT®



and the memory it takes to use it. Plus you get your choice of either 17 or 35 scalable fonts, starting at just \$1,999.*

When it comes to print speed, microLaser zips along at 6 ppm. If you need a shared printer solution, turn to its cousin, microLaser XL. This workhorse gallops at a formidable 16 ppm.

If all that isn't enough, just look at what else you get with microLaser. It's the smallest printer in its class. It handles more paper and envelopes in more ways. And it supports more than 4,000



software packages, including your Windows applications.

So when you add it all up,

you'll understand why MacUser needs the power, convenience and economy of microLaser. Let microLaser open new windows for you.

For the name of the nearest dealer, call **1-800-527-3500.**

The microLaser PS17 has earned the 1990 PC World Best Buy award; microLaser PS35 has earned the 1990 InfoWorld Excellent Value award and 4½ mice from MacUser, October 1990.


**TEXAS
INSTRUMENTS**

*TI suggested retail price. (Dealers' prices may vary.) microLaser is a trademark of Texas Instruments Incorporated. Adobe, PostScript and the PostScript Logo are registered trademarks of Adobe Systems, Inc. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation. ©1991 TI 71816

Circle 296 on reader service card

Hassle-Free Printer Sharing

for the HP LaserJet II, IID, III and IIID



"The ServerJet is the smoothest and most practical way I know to share a LaserJet."

Frank J. Derfler, Editor
PC Magazine, 1/15/91

Here's how you and your co-workers can have your own HP LaserJets without breaking the corporate budget.

It's called **SimplAN ServerJet**.

Simply plug the *ServerJet* into the 'Optional I/O' slot of your HP LaserJet. Stretch phone cable, up to hundreds of feet, to each computer. Then, 12 people can simultaneously *whoosshh* documents to the LaserJet at speeds as fast as 115,200 baud.

No more wandering down the hall with floppy in hand.

Or borrowing someone else's LaserJet.

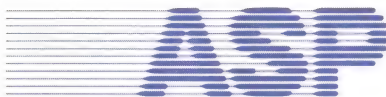
Or wasting time waiting to print.

SimplAN & ServerJet are trademarks of ASP Computer Products, Inc. / HP LaserJet is a registered trademark of Hewlett-Packard Co.

The *ServerJet* is available in a variety of models with up to 4MB of buffer memory. And because your office may have printers other than HP LaserJets, ASP Computer Products offers a complete line of printer sharing solutions.

To order your *ServerJet* or for more information call ASP at:

800-445-6190



ASP COMPUTER PRODUCTS, INC.

1026 W. Maude Avenue, Suite 305
Sunnyvale, California 94086
Phone: 408-746-2965 • Fax: 408-746-2803

Circle 43 on reader service card

THE HELP SCREEN

WHERE TO BUY

Disk Manager

Ontrack Computer Systems Inc.
6321 Bury Dr.
Eden Prairie, MN 55346
800/752-1333, 612/937-1107
LIST PRICE: \$124.95

Reader service no. 684

Peripherals in Search of Interrupts

Q. I recently purchased a 33-MHz 386 and a full set of peripherals: two printers, a plotter, a scanner, a fax board, and a serial mouse. After installing the fax and scanner boards, I find there are only enough interrupts to install two of the four ports I need to hook up my peripherals. Is there a way to configure the machine to handle all this equipment?

Richard Barnhart
Belmar, New Jersey

A. Check your boards and see if any of them can be configured to one of your system's higher interrupts, IRQ9 and up. If two of your boards can use the higher interrupts, you won't need any additional hardware. Unfortunately, most boards support only those interrupts found on the original PC, IRQ7 and below. If that's the case here, switch to a bus mouse to free up IRQ3. Then

POWER TIP NO. 203

Quick Leader Dots With WordPerfect 5.1

If you need to generate leader dots that run flush to the right margin, the fastest, easiest way is to press <Alt>-<F6> twice with your cursor positioned on the line where you want to start your leader dots. To create a leader dot that runs to the center of the line, press <Shift>-<F6> twice.

Vivek Wig
Moreno Valley, California



ChipUp™ Technology



The AcerPower 486SX. The World's 1st Single CPU Chip Upgradable System.

Introducing the world's first single CPU chip upgradable system, the AcerPower 486SX. Running at 20 MHz, the new AcerPower 486SX gives you the easiest, most cost-effective way to step up to increased 486 functionality. Utilizing Acer's **ChipUp™** technology*, all you have to do is plug in a new CPU and upgrade to full 33 MHz 486 functionality, practically doubling system performance. When you're ready to change, just plug in a chip. No more expensive boards to replace.

The AcerPower 486SX also offers a future upgrade path of up to 98 MB of system memory.



Together with integrated Ultra-VGA graphics, it furnishes a powerful graphics engine for Windows 3.0, desktop publishing, CAD/CAE, and other graphically demanding software applications. And with 15 built-in security features, desktop computing has never been more secure.

To see just how affordable Acer's upgradable 486SX technology can be, check out the new AcerPower 486SX. To see yours, just call one of the numbers listed below.

From notebooks to networks, Acer has it all.

Acer is a registered trademark of Acer Incorporated and Acer America Corp. Intel is a registered trademark of Intel Corp. Other products, brandnames, or companies mentioned are trademarks of their respective companies.

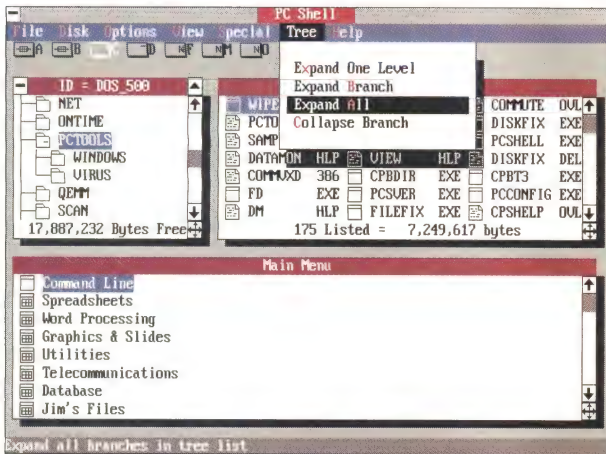
* Patent pending.

Acer America Corporation 401 Charcot Avenue, San Jose, CA 95131.
Call 1-800-SEE-ACER for More information.

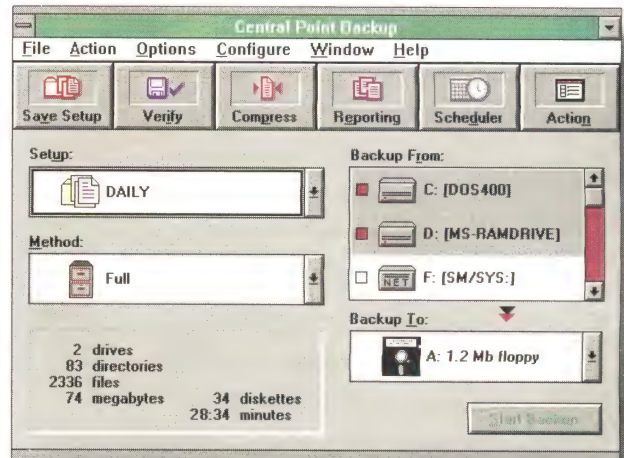


Your Global Partner in Computing

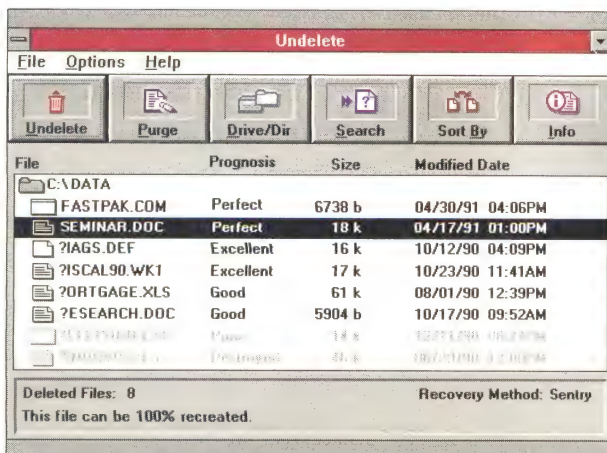
"We Chose PC T The Best Technol



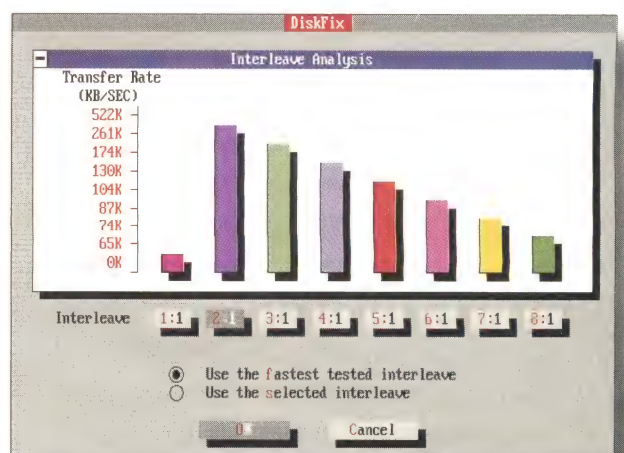
DOS 5.0 Compatible Shell & File Manager. Designed for DOS 5.0 keystroke and menu compatibility, PC Tools 7.0 gives you a powerful system for launching applications and managing your hard disk. Includes viewers for 37 popular programs.



DOS and Windows Backup. Only PC Tools gives you award-winning backup for DOS and Windows in one box. Both programs use the same keystrokes and file formats so you can move to Windows without a hitch.



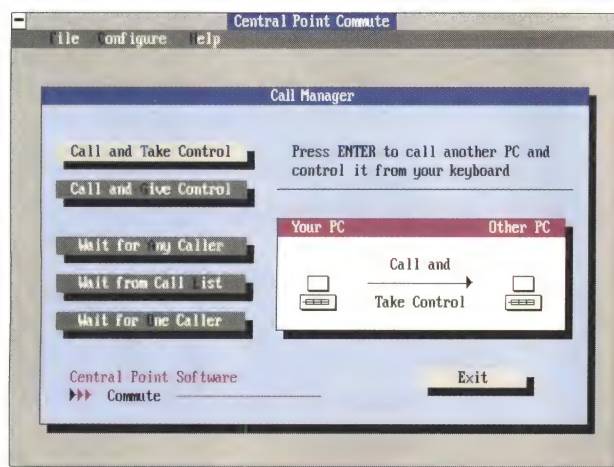
DOS and Windows Undelete. Our new Undelete moves erased files to a "safety zone" on your disk – local or network. It's compatible with the technology we licensed to Microsoft for DOS 5, but provides even better protection.



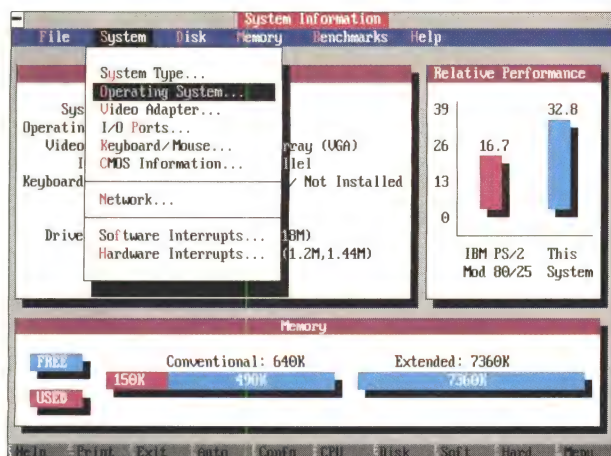
Disk Maintenance and Repair. To help avoid disk crashes and optimize data transfer, our DiskFix™ now does non-destructive, low-level reformatting. DiskFix solves dozens of other disk problems as well.

Is Because It Is On The Market."

Brad Silverberg, VP for DOS & Windows, Microsoft (Oct. 1990)



Remote Computing. PC Tools Commute™ lets you take control of another PC, whether you're across town or across the country. Use it over a modem or LAN. You even get remote mouse support for Windows.



System & Network Information. Reports on over 160 attributes, including video, I/O, memory, mass storage, and four performance benchmarks. On NetWare, SI displays all servers, usage, users, and Novell groups.

Introducing PC Tools™ 7.0.

Whether you're running DOS or Windows, on a network or stand-alone, nothing can protect and manage your data as completely as PC Tools™ 7.0.

New PC Tools gives you the most advanced utilities you can buy in one integrated package. Like real Windows applications, new remote computing, and the only DOS shell with a Microsoft-licensed visual display.

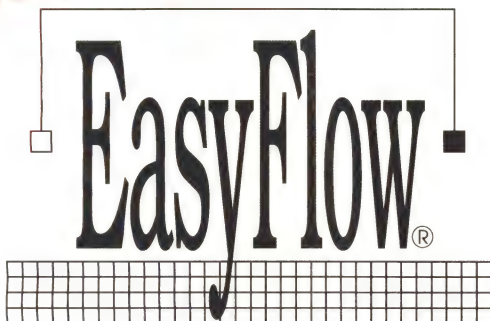
Nothing tops PC Tools 7.0 for data recovery. Our new Delete Sentry manages and protects your deleted files to ensure 100% recovery. And gives you file-preview capability as well. It's the perfect companion to the undelete technology we wrote for DOS 5.

For the best technology available, get new PC Tools. Call us at **1-800-445-4206** for the name of the dealer nearest you.



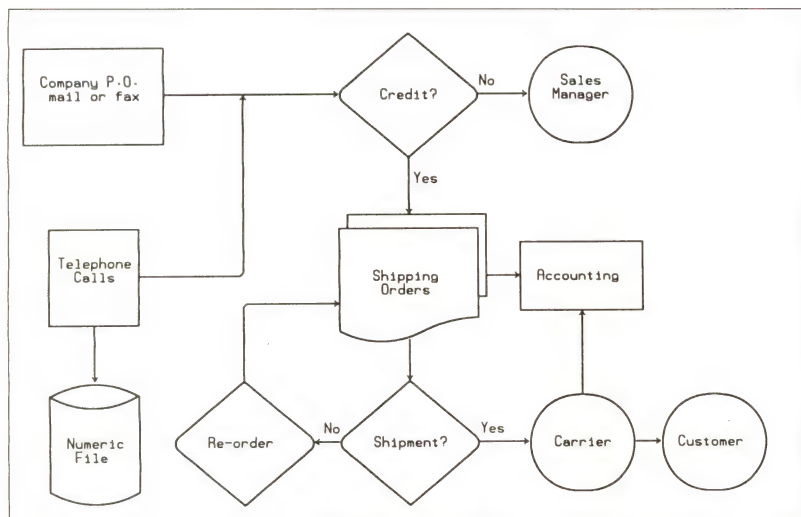
Central Point Software® INC
Making Computing Safer, Simpler, Faster.

Announcing



Version 7.0

- FULL COLOR SUPPORT
- GLOBAL SEARCH & REPLACE
- AUTOMATIC LINE ROUTING
- OVER 270 OUTPUT DEVICES SUPPORTED
- NOVELL SUPPORT
- 3D CHARTING
- USER FRIENDLY
- FAST



In any business there are processes and procedures that must be documented. EasyFlow is a powerful program dedicated to the fast creation and modification of flowcharts, data-flow diagrams and organization charts. Unprecedented support for a wide range of desktop publishing and graphics programs allows for easy integration of charts into larger documentation. Alternate shape libraries for accounting diagrams, networking diagrams and fault-tree diagrams expand the usefulness of the program and are available for an additional cost. Ease of use, flexibility and speed along with FREE technical support and a NO RISK 30 Day Money Back Guarantee all combine to make EasyFlow the industry leader and corporate standard.

Special Introductory Offer \$230

Plus Shipping

ORDER HOTLINE 1-800-267-0668



HavenTree Software Limited
P.O. Box 1093 - M
Thousand Island Park, NY 13692
Information: (613) 544-6035 ext.47
Fax: (613) 544-9632



For your local dealer
call:
800-724-0794

THE HELP SCREEN

free up IRQ5 by disabling LPT2, and hook both your printers to LPT1 via an electronic switch box. (Avoid mechanical A/B switches, as the line noise generated by some can damage a printer's electronics and invalidate its warranty.) Alternatively, you could exchange one of your boards for one that can use a higher interrupt.

Recycle Your PCjr

Q. I'm one of the poor souls who purchased an IBM PCjr. Can I use any of its components with another system? If so, where can I find adapters for the jr's nonstandard cables?

Charles A. Si Harris
The Colony, Texas

A. Amazing as it sounds, there may be as many as 300,000 PCjrs still in use at this time. In any case, that means that there's still an active community of jr users. You can plug into their grapevine through the monthly *Jr. Newsletter*,

POWER TIP NO. 204

Tinting Your WordPerfect Windows

If you commonly work in two windows at the same time with WordPerfect, giving their backgrounds different colors will help you keep track of which file you're working on. At the document screen, press <Shift>-<F1>des followed by <Shift>-<F3> to change to your second window. Press <Cursor Right> to place the cursor on Normal Background. Choose the desired color from the menu at the top of the screen, and press the corresponding letter. Press <F7> twice to get back to editing mode.

Ross A. Buck
Dhahran, Saudi Arabia

The Drudgery Of Image Processing Just Went Out The Window

HOT, NEW
NOW

Automatic Filters remove spots, sharpen resolution, adjust brightness and contrast, blend, and equalize scanned images.

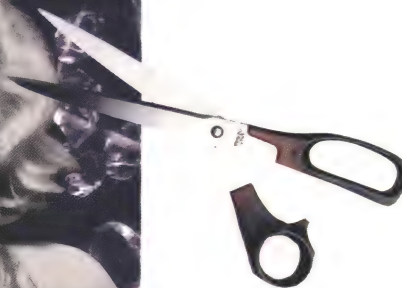


Zoom In and Zoom Out in multiple levels while accessing all tools, retouching features, and special effects.

Special Effects let you tint, smudge, add patterns and gradient fills, create 3-D effects, style text, give images a mosaic look, simulate "motion blur," and more.



Create and edit images with up to 16.7 million colors or 256 shades of gray.



With Publisher's Paintbrush®—ZSoft's new, top-of-the-line image processing program, custom built for Windows™ 3.0. The program designed for professionals. Integrating ZSoft's award-winning paint tools, complete scanner control, plus the most powerful, sophisticated image processing capabilities available. All in one easy-to-use application.

Complete image control is yours: multiple level zooms let you move from precise editing...to larger than screen size images...while accessing all tools. Automatic filters amplify detail and save hours of retouching.

Gray scale calibration ensures realistic output. View multiple versions of images in multiple windows for easy comparison while retouching, cloning, and cutting-and-pasting. Extensive file support (PCX, TIF, GIF, BMP, EPS*, TGA and more) guarantees compatibility.

Enhance photos and create powerful visual effects for brochures, newsletters, presentations, and more. With Publisher's Paintbrush, creativity knows no limits. For more information about the image processing program for professionals, call us at (404) 428-0008.

See your local dealer today!



ZSoft
CORPORATION

© 1991 ZSoft Corporation

*EPS file support is write only. System Requirements: Microsoft Windows™ 3.0 or higher, Windows-capable computer with a hard disk, display adapter and drawing device. Publisher's Paintbrush is a registered trademark of ZSoft Corporation. Windows is a trademark of Microsoft Corporation. Photo licensed by The Roger Richman Agency, Inc., Beverly Hills, CA.

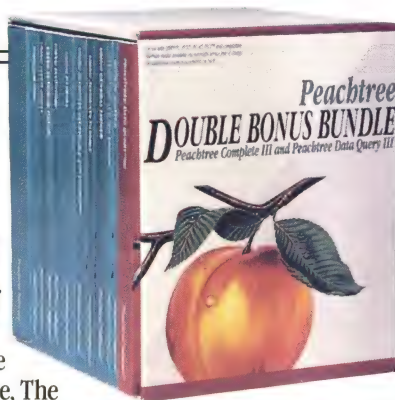
To update, send \$75 (add \$4.90 shipping/handling) and your original Publisher's Paintbrush program disk to: ZSoft Update, Dept. WX, 450 Franklin Rd., Suite 100, Marietta, GA 30067. Specify 5.25" or 3.5" disk. GA residents add (3%) sales tax. Canadian customers add \$15.90 for air shipping. Outside N. America, add \$15.90 for surface shipping, \$24.90 via air. Payment in U.S. funds by check, money order, VISA, MC or AX. Upgrades from all ZSoft PAINT programs available; call for details. (404) 428-0008.

Circle 320 on reader service card

PEACHTREE ACCOUNTING MAKES



When you're running your own business, every financial decision is an important one. Why not make sure you are getting the most out of your business dollars by using the best value in accounting software, The Peachtree Double Bonus Bundle ■

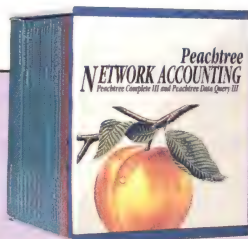


"Rivals packages costing 10 times as much... a joy to use..."

—PC Resource

"This package is truly a bargain and is ideal for a small to mid-sized company."

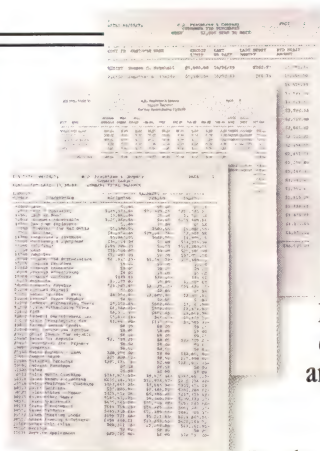
—Computers in Accounting



Give every workstation the power of Peachtree with Peachtree Network Accounting!

Now your entire staff can access the full-featured accounting power of Peachtree Complete III plus the custom reporting capabilities of Peachtree Data Query III in one package—Peachtree Network Accounting. Not only will your hardware costs be reduced by sharing hard disks and printers, but your authorized users will have faster, easier access to shared accounting information. Available now for use with Novell® LANtastic™ and other NETBIOS compatible LANs.

\$695



Peachtree has combined two high-powered programs into one value-packed bundle—Peachtree Complete III, a comprehensive accounting system, and Peachtree Data Query III, a custom reporting and analysis tool ■

Peachtree Complete III has nine powerful modules, each loaded with features you'd expect to find in much higher priced packages:

- General Ledger
- Accounts Payable
- Accounts Receivable
- Payroll
- Inventory
- Invoicing
- Purchase Order
- Fixed Assets
- Job Cost

The management reporting capabilities of Peachtree Data Query III provide you with personalized views of the accounting data in your Peachtree Complete III files. Whether you choose one of the 50 pre-defined reports or customize your own, PDQ lets you get to the meaning behind the numbers with historical reports and complex analyses to give you a more complete picture of your business finances ■

"The reports will impress you, your accountant, your banker and the IRS... a wonderful tool to help get your business on the right track, and keep it that way in the coming years."

—Journal of the Chicago Computer Society

There's a Peachtree Accounting Product for Every Small Business.



Crystal Accounting™ The Clear Choice for Windows Accounting. Includes G/L, A/R, Invoicing, A/P, Payroll and Financial Report Writer. **\$249**



Peachtree Complete III® The Biggest Value In Small-Business Accounting. Includes G/L, A/P, A/R, Invoicing, Payroll, Inventory, Purchase Order, Fixed Assets and Job Cost. **Winner of the 1990 Computer Shopper Best Buy Award. \$199**



Peachtree Client Write-Up. The Accountant's Answer to Increased Productivity. Will interface to Peachtree Complete III, Crystal Accounting and other leading accounting systems. **\$995**

EVERY PENNY COUNT.



With PDQ, you can even read and report on data from your Lotus 1-2-3® spreadsheets, and export data to Lotus 1-2-3, dBASE® and other popular applications with no re-keying of data and no risk to your files.

Best of all, you won't sacrifice ease of use to get the power and performance your business needs. There's an on-line tutorial in each module and an Accounting Primer, so you can learn accounting as you set up your files. Context sensitive HELP is on-line at all times. Peachtree provides a thorough reference library, including a quick-start installation guide to assure that you'll be up and running quickly. Errors are handled with understandable, plain English messages and suggestions ■



"I have installed and set up Peachtree for many small businesses. After the first 30 days, I become the Maytag® Repairman."

—Karen R. Gooding

Economy Bookkeeping, Hilton Head Island, SC.

FEATURES

General Ledger

- Repeating and reversing journal entries.
- One to 13 user-defined fiscal periods.
- Comparative financial statements.

Accounts Payable

- Partial payment of invoices.
- Cash requirements forecasting.
- Check printing from 9 different bank accounts.
- Prints miscellaneous and interest 1099s and handles magnetic media.

Accounts Receivable/Invoicing

- Open item or balance forward customers.
- Supports partial payments.
- Multiple "Ship To" addresses per customer.

Purchase Order

- Issues purchase orders for either stocked or non-stocked items.
- Inventory update upon receipt of items.
- Ability to generate A/P invoice from purchase order.

Payroll

- Built-in federal, state, city and county tax tables for all 50 states.
- Automatic payroll processing supporting hourly, salaried, commission or draw-against-commission pay types.

- Supports Cafeteria and 401K Plans.

- Optional Peachtree Complete Tax Service available.

Inventory

- Supports LIFO, FIFO, Specific Unit, standard and average costing methods.
- Optional serial number tracking.
- Supports assembly and disassembly capabilities.

Job Cost

- Tracks costs and profitability on a job-by-job basis.
- Interfaces with A/P, A/R and Payroll.

Fixed Assets

- Handles 13 methods of depreciation.
- Handles short taxable year.
- Mid-quarter convention.

Peachtree Data Query III

- Transfer accounting information in ASCII or WKS formats to spreadsheet and database programs such as dBASE and Lotus 1-2-3.
- Create your own custom reports and save the formats for future use.
- Print stored reports directly from your Peachtree Complete III menu.

"I would highly recommend Peachtree... a peach of a program."

—New Jersey PC User Group News

In a recent survey by *Accounting Today* magazine, Peachtree was recommended by accountants almost twice as often as the nearest competitor. When *Reseller Management* asked resellers which accounting package they recommend, Peachtree came out on top again, with 25% of resellers recommending it.

Most importantly, users recommend Peachtree! Based on reader response, *Computer Shopper* named Peachtree Software the Best Buy in Accounting Software for 1990. More than 400,000 small businesses trust their accounting to Peachtree ■

"...How good is technical support? I can honestly say it is excellent!"

—Jack J. Neymark

Jack J. Neymark Accounting Services

Convenient technical support may be purchased from Authorized Support Centers in over 60 cities across the country or through prepaid support contracts directly from Peachtree. We stand behind our products with a 60-day money back guarantee when you buy directly from Peachtree. If you aren't satisfied with your Peachtree product, simply return it within 60 days for a prompt refund (less a restocking fee.) ■

**Call now to order
or for the name of a dealer in your area
1-800-247-3224**

or 404-564-5800 or to order by Fax 404-564-5888

\$298

Add \$12.50 Shipping
In Ga., add sales tax.
Phone number required
on all orders.

Save \$100 over retail price
of Peachtree Complete III and PDQ III!

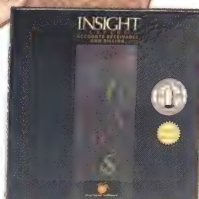


Peachtree Software

Hardware Specifications: Requires PC/MS-DOS version 3.0 or higher (DOS 3.1 required for Network Accounting) with 640k of memory and a hard disk. For use with IBM® PC, PC XT, PC AT, Personal System/2™ and compatibles. Alternate media optionally available. Not copy protected. Product names referenced are trademarks and registered trademarks of their respective manufacturers.



atOnce!® Macintosh Accounting as Easy as it Gets. Includes G/L, A/R and Billing, A/P and Payroll. Winner of the MacUser Eddy Award and the Macworld World Class Award. \$249



INSIGHT EXPERT.™ The Power to See Beyond the Numbers for Macintosh Users. Includes G/L, A/R and Billing, A/P, Inventory and Payroll. Winner of the MacUser Eddy Award and the Macworld World Class Award. \$395 per module.

Circle 144 on reader service card

PCW

which includes ads for PCjr-related products and maintains a catalog of "classic" shareware programs that run on 128K systems. We've also identified the following couple of BBS's and active user groups for additional jr support. Good luck.

WHERE TO BUY

Atlanta PCjr Users Group

6575 Ambergades Ln.
Atlanta, GA 30328
404/255-2731

Jr Blue BBS

209/745-9284 (5 p.m.-8 a.m.)

Jr. Newsletter

P.O. Box 163
Southbury, CT 06488

Metro PC Jr. Users Group

213 Cedar Ave.
Gaithersburg, MD 20877
301/926-4185 (12 p.m.-9 p.m.),
301/948-8498 (24-hour BBS)

Stop That Blinking Cursor Revisited

In our May column, we told reader Christopher Kocks there was no way to stop a PC's cursor from blinking because the video hardware doesn't permit it. Several readers wrote to inform us of two memory-resident utilities that create nonblinking cursors. Both *NoBlink* and *No-Squint II* use the same clever approach to get around the hardware limitation: They turn off the hardware cursor entirely, then display the character at the cursor position in contrasting colors or inverse video. Thanks to readers Eric Hansen, Richard Hathaway, R. C. Spencer, and Vernon Shetley for setting the record straight.

WHERE TO BUY

NoBlink

Instant Replay Corp.
4525 S. Wasatch Blvd. #335

Salt Lake City, UT 84124
800/388-8086, 801/272-0675 (fax)
LIST PRICE: \$49.95
Reader service no. 685

No-Squint II

SkiSoft Publishing Corp.
1644 Massachusetts Ave. #79
Lexington, MA 02173
800/662-3622
LIST PRICE: \$49.95
Reader service no. 686

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.

How does...? What can...? Should I...? Send your PC questions to The Help Screen, PC World, 501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). Questions with the broadest appeal will be published. ☉

Portable backup for every PC No controller card required!

Carry it from
one PC
to the next!

Uses 60 or
160 MB data
cassettes or
250 MB
cartridges.

Connects in
seconds to
parallel or
serial port.

Backs up your
hard disk
files at up to
4.5 MB/minute.



Oct. 15, 1990
PST-160

See us at
COMDEX/Fall '91

One unit supports many PCs or compatibles. No jumpers or switch settings to change, no DMA channels to select, no installation programs to run. Available in 60, 160, and 250-MB models. Call today, **1 (800) VALITEK (825-4835)**. Or call (413) 586-7408, or FAX (413) 586-6790.

VALITEK

Circle 307 on reader service card



CompuAdd
316mx

NUM LOCK CAPS LOCK SCROLL LOCK HDD

Travel Documents Enclosed
Domestic Flights
AIRLINE FLIGHTS MUST BE RECONFIRMED
At least 48 hours prior to departure.
International Flights
At least 72 hours prior to departure.

PASSPORT



United States

No
Kidding!

CompuAdd
31617X

NUM LOCK

CAPS LOCK

SCROLL LOCK

HDD

Travel Documents Enclosed
AIRLINE FLIGHTS MUST BE RECONFIRMED
Domestic Flights
At least 48 hours prior to departure
International Flights
At least 72 hours prior to departure

PASSPORT



United States

At \$1995, Our 316nx Notebook is Now \$500 Lighter!

Some notebook PCs carry a hefty \$5,000 to \$6,000 price tag. So at a slimmed down \$1,995, the 7 pound CompuAdd 316nx notebook PC is more attractive than ever.

But reduced price doesn't mean reduced performance. The CompuAdd 316nx uses the Intel 16MHz 386SX microprocessor with the internal 32-bit processing required for optimal multitasking and high-performance computing.

You get excellent data handling and storage with a 30MB standard hard drive and a 3.5" 1.44MB diskette drive. The CompuAdd 316nx is already loaded with CompuAdd MS-DOS 4.01 and 1MB of memory.

And with 1MB, 2MB or 4MB memory cards, you can easily upgrade the 316nx to 5MB.

Other options include a 387SX math coprocessor, numeric keypad and 2400-baud Hayes-compatible modem.

When Your Desktop is an Airline Tray Table...

You'll appreciate the large well-spaced keys and backlit, monochrome VGA liquid crystal display. All in a compact 7 pound, 11" x 8.5" x 2.1" notebook package.

There's even a low battery alarm — and a rechargeable, removable internal battery with an AC adapter that make it easy to recharge your notebook on the road. A built-in fax/modem expansion slot lets you phone in your work. External serial and parallel printer ports,

mouse, numeric keypad and video connections let you hook to a desktop set-up when you reach your destination.

Satisfied Customers Rank CompuAdd #1

In a recent independent survey of computer owners, CompuAdd ranked above Apple, IBM, Compaq and 21 others in overall customer satisfaction. The reason? Our high standard of service. Now, more and more computer buyers are discovering the advantages CompuAdd provides. Only CompuAdd owns the entire product delivery system. We design, manufacture, sell and service our system — assuring you of the consistently high quality you want down the line.

CompuAdd®

Customer driven, by design.



Call 800-388-1296

Key Code 832

Hours: Monday - Friday 7:00am to 9:00pm CST; Saturday 9:00am to 5:00pm CST
12303 Technology Blvd. Austin, Texas 78727



800-387-3266



95-800-010-0401



0800-373535



0130-6009

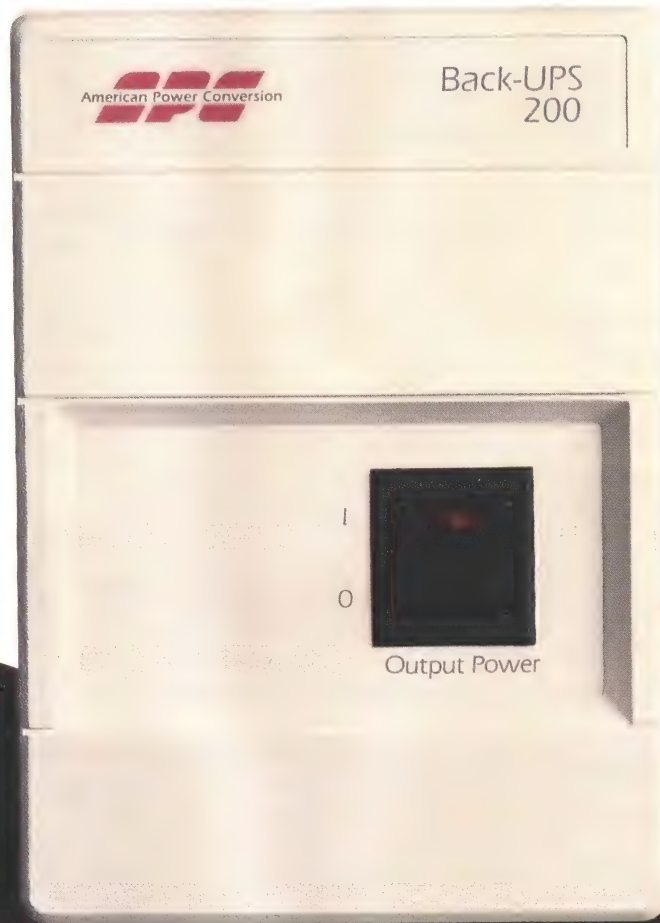


1-40364949

NOW SUPPORTS
ARTISOFT'S
LANTASTIC 4.0

Get a hold of the best value in power protection for just \$199

suggested list price



Blackouts, brownouts, sags... Your data and hardware are vulnerable to problems that surge suppressors are just not designed to handle.

Now there's a complete Uninterruptible Power Supply solution. The Back-UPS™ 200 is reliable protection for LAN nodes, 286, 386SX machines, small PS/2 systems, and inter-networking devices such as routers, bridges, gateways and hubs.

From the largest server to the smallest router, the Back-UPS series provides a cost-effective solution. Call for your free power protection handbook.

Circle 45 on reader service card

■ Full-time surge protection and line filtering

■ Models from 200 to 1200 Volt-Amps, many with LAN interface

■ Novell approved with a 2 year warranty

■ Rack Mount, Extended Runtime, 220V models available

■ Ask about PowerChute® UPS monitoring software and Novell-compatible UPS monitoring boards

LAN TIMES
READERS CHOICE 1990
LAN TIMES
READERS CHOICE 1991

The Back-UPS™
by American Power Conversion

800-541-8896, Dpt. P3

33-1-60078500 in Europe

NETWORK Q & A

Hook Your LAN's E-Mail System to the World

Keith Nickerson

Q. We're planning to link the LANs in our regional offices with the gateway software available for our E-mail program. We also want to provide people on the road with dial-in access to E-mail from their laptops. Would we be better off using a remote-control package such as pcAnywhere or the special remote version of our E-mail program? What kind of PCs and modems should we use for the gateways?

Charles Wiggins
Phoenix, Arizona

A. It's better to use a special remote E-mail package than a general-purpose remote-control program. Remote E-mail packages allow remote users to create and edit messages off line on their PCs, then dial the gateway and transfer messages when ready. This is more flexible for the user and greatly reduces phone-line charges when dialing into the LAN long distance. Also, users won't have to learn any new software for remote access—most remote E-mail programs work just like the local version.

The hardware requirements for mail gateways are not that stringent. For the gateway PC, you can use any 286 (or better) system that has 640K of memory (XT- and PC-class systems may not be able to keep up with today's faster modems). No hard disk is needed.

While a standard 2400-baud modem is quite sufficient for straight-text E-mail transfers, it may prove too slow if you have unusually heavy mail traffic or regularly attach large files to your E-mail messages. Using a faster modem will speed things up, and it will eventually pay for itself in reduced long-distance charges. Remember that a faster modem is a benefit only if it's matched by an equally fast modem at the other

end. Your best bet is to start off with 2400-baud modems with V.42bis hardware compression, then keep an eye on your phone bill and upgrade to 9600 baud if that seems justified.

In any case, use external rather than internal modems. You can view the LEDs on the modem to monitor the transfer of data, and if you need to reset the modem, switching an external modem on and off is much easier than rebooting the gateway PC.

For each gateway you set up, you'll need a dedicated phone line with its own direct-dial number. Because the LAN-to-LAN gateways dial each other automatically, you can't route them through your central switchboard or voice-mail system. If you have many remote users, consider setting up a toll-free 800 number as the dial-in line.

An alternative to dedicating a PC as a mail gateway is to use a "PC-on-a-board." These boards have everything that you need for a remote communications processor: memory, I/O processor, and LAN interface. Simply install one of these boards in an expansion slot in your file server; then attach a modem to its standard COM port. When you bring up your file server, the board is booted as a diskless workstation, and the communications software is loaded by the remote boot file you create through your network operating system software. You monitor the gateway from your workstation via remote-control software.

While a PC-on-a-board may cost as much as a bare-bones stand-alone 286 for the gateway, it's a much cleaner solution. You don't need a separate PC and all its associated cabling sitting in your LAN room. This is a particularly attractive approach if you run several gateways at once (to let several remote users dial in simultaneously, for instance). Several of these boards installed in your file server take a lot less

space and power and generate a lot less heat and noise than an equivalent pile of gateway PCs. ●

Keith Nickerson is the editor of NetWare Advisor and a member of the publishing team at Business Systems Group, a Houston-based systems integration firm.

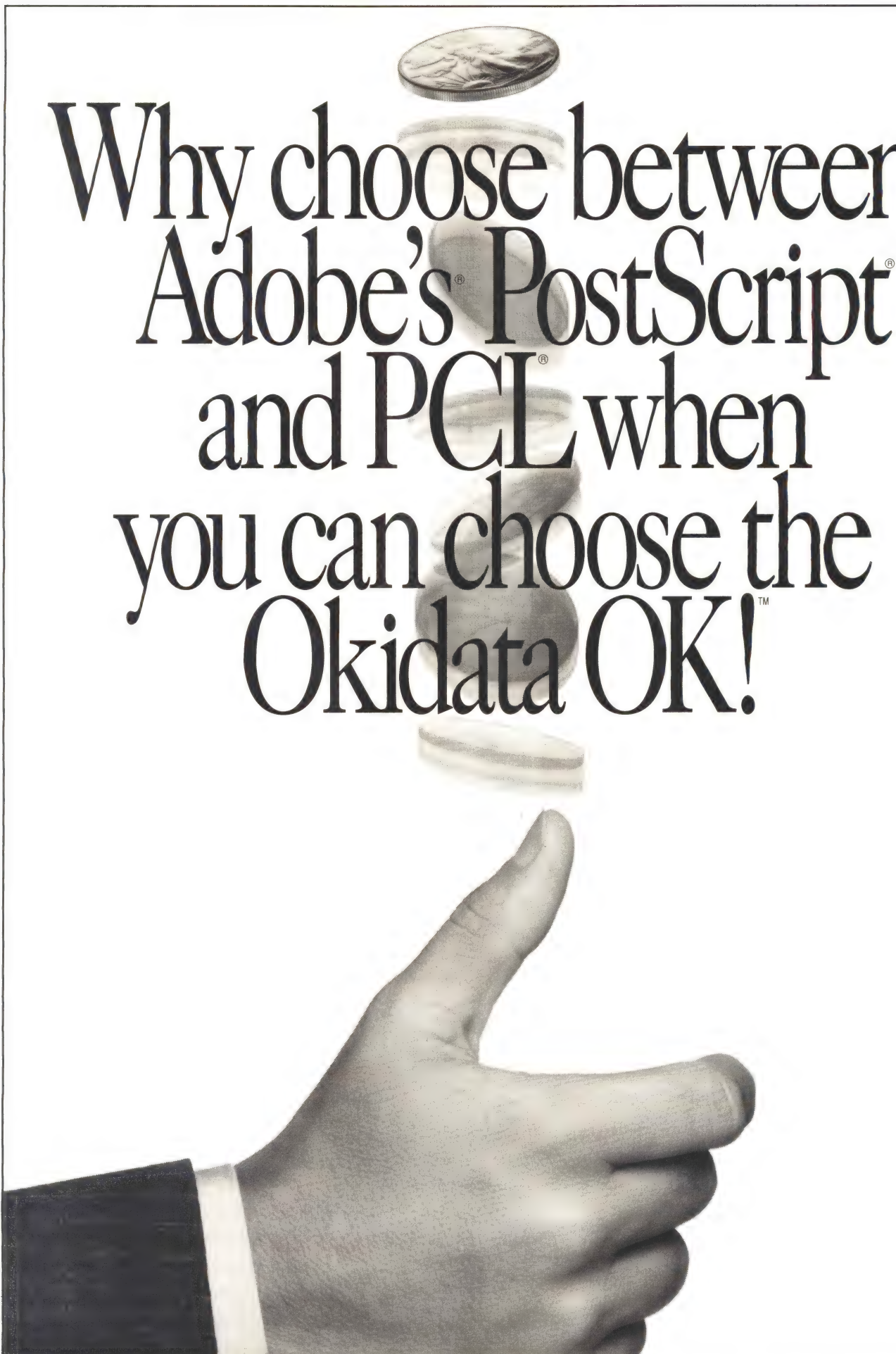
POWER TIP NO. 205

Extra Text Lines for Harvard Graphics Charts

From the looks of it, you can enter no more than three single lines of text in a Harvard chart—one each for a chart's title, subtitle, and footnote. That's the amount of space available on the chart's data screen. But the first Titles and Options page gives you room for expansion.

Even veteran Harvard Graphics users overlook the single blank space below the 'Subtitle' prompt on Titles and Options page 1 and the two spaces below the 'Footnote' prompt. Fill these with text, and they show up as additional titles on your chart exactly as entered. No need to use the Draw/Annotate command or the Draw Partner drawing program to add second and third title lines as separate text objects. You can even use <F7> (Size/Place) to scale and position these text lines independently.

Steve Sagman
New York, New York

A black and white photograph of a hand in a dark suit sleeve with a white cuff, balancing a stack of five coins on its index finger. The coins are stacked vertically, with the top coin showing a profile of a person. The background is plain white.

Why choose between
Adobe's[®] PostScript[®]
and PCL[®] when
you can choose the
Okidata OK![™]

With the LaserJet® III, Adobe's PostScript is only available as a costly add-on. And you can't return to PCL without powering down the machine and re-configuring it. The Okidata OL840 gives you PostScript printing right out of the box - and is software-switchable between Adobe's PostScript and PCL.

Today, more and more end users are learning of the unique capabilities of Adobe's PostScript, and more and more software packages (over five thousand to date) let you take advantage of the dramatic results PostScript printing can bring to any business document.

Adobe's PostScript Made Easy.

The Okidata OL840 offers the business printer buyer all of the advantages of PostScript printing, with none of the compromises. Unlike the LaserJet III, the Okidata OL840 is PostScript-ready when you buy it - with 35 Adobe type fonts, a full 2 megabytes of installed RAM, and an AppleTalk® Network Interface, all for only \$2599*. (Adding all this hardware to a LaserJet III adds over \$1000* to their suggested retail price.)

The Best Choice Is Not To Have To Make One.

More important, the OL840 lets your software switch between Adobe's PostScript and PCL. And with Serial, Parallel and AppleTalk interfaces all available, you can keep all your options open - both PC and Macintosh® users can access the same printer.

(With a LaserJet III converted to PostScript printing, you have to power down and re-configure the machine to switch back to PCL.)

But PostScript printing is only one part of the Okidata OL840 story.

It's a full-featured, Novell® Network certified, 8-ppm work horse with full 300 dpi resolution, a built-in 61-font type library (35 Adobe, 26 PCL), a high-capacity 200 sheet paper tray, and Okidata's no-moving-parts LED printhead - the only one in the industry warranted for five full years (plus 1 year parts and labor on the printer). You can add a second paper tray to automatically feed alternate letterhead sheets or envelopes (an option the LaserJet III doesn't offer).

Our Most Important Feature: The Okidata OK!

Finally, like every printer Okidata makes, the OL840 proudly wears the Okidata OK! It's our personal pledge to every customer that your new Okidata machine will deliver not just adequate performance, but exceptional performance - and provide not only good value, but outstanding value.

For more information on the OL840, or the name of the Okidata dealer nearest you, call 1(800) OKI-DATA.



We don't just design it to work. We design it to work wonders.™

*Manufacturer's suggested retail price. Dealer price may vary. OL840 pictured with optional second paper tray and mechanism. LaserJet and PCL are Reg. T.M.s of Hewlett Packard Inc. Adobe and PostScript are Reg. T.M.s of Adobe Systems Inc. Apple Talk and Macintosh are Reg. T.M.s of Apple Computer Inc. Novell is a Reg. T.M. of Novell Inc. Okidata is Reg. T.M. and Okidata OK! is a T.M. of OKI Electric Industry Co., LTD. "We don't just design it to work. We design it to work wonders." is a T.M. of OKI America Inc.

Make the Smart Choice in LaserJet PostScript Language Emulation Cartridges

	Pacific Data Products		Hewlett-Packard
	PacificPage P•E™	PacificPage XL™	PostScript Cartridge
Suggested list price including 2 MB memory	\$ 718*	\$ 999	\$ 1085
Time to output Ventura Scoop	2 minutes 23 seconds	39 seconds	2 minutes 54 seconds
Money-back guarantee	Yes	Yes	No
PostScript to PCL switching	Yes	Yes	No
Upgrade program	Yes	Yes	No
Warranty	Lifetime	Lifetime	One year

★ Suggested list price of PacificPage P•E cartridge without a 2 MB memory board is only \$499.



"PacificPage swiftly and accurately renders some test EPS files that other interpreters distort, and had no trouble with any of the large and complex images I used for testing."

"An Intel i960™ RISC processor on the accelerator board helps the PacificPage XL print graphics more than six times as fast as the HP PostScript Cartridge"

Edward Mendelson
PC Magazine, (June 25, 1991)

Don't settle for less just to buy the Hewlett-Packard name. Ask for PacificPage PostScript® language emulation solutions from Pacific Data Products. You'll get a lot more, for a lot less.

Each PacificPage product for LaserJet® IIP, IID*, III, IIID, and IIIP printers is guaranteed to be completely compatible with all of your PostScript output. If you can create it, PacificPage can print it. If not, we'll give you your money back.

Choose from PacificPage P•E, our fastest stand-alone cartridge ever. Or PacificPage XL which combines the PacificPage P•E cartridge with a RISC-based accelerator board. Just slip the board into the LaserJet memory slot and you'll experience an incredible increase in printing speed. If you purchase the PacificPage P•E cartridge alone and find that your printing applications demand even greater speed, simply upgrade to PacificPage XL.

Why not get more for less? Buy PacificPage P•E and save almost \$400 over Hewlett-Packard. Or, save close to \$100 over Hewlett-Packard with PacificPage XL and amaze yourself with its speed. Make the smart choice. Choose PacificPage.

For more information call your nearest dealer or contact Pacific Data Products, 9125 Rehco Road, San Diego, CA 92121, USA.
(619) 597-4666, Fax (619) 552-0889.

PACIFIC
DATA PRODUCTS

* The PacificPage XL accelerator board is not compatible with the LaserJet IID. Prices listed are manufacturer's suggested retail list price as of 6-25-91. Quotes reprinted from PC Magazine June 25, 1991. © 1991, Ziff Communications Company. PacificPage P•E and PacificPage XL are trademarks of Pacific Data Products, Inc. PostScript is a registered trademark of Adobe Systems Incorporated. HP and LaserJet are registered trademarks of Hewlett-Packard Company. i960 is a trademark of Intel Corporation. PhoenixPage is a registered trademark of Phoenix Technologies Ltd. © 1987, 1988 Phoenix Technologies Ltd. © 1991 Pacific Data Products, Inc. European Headquarters: Switzerland Tel (41) 22-412650, Fax (41) 22-410682.





CONSUMER WATCH

Advice and information for the computer consumer

Shopping for a PC for your home office? Verify that it's Class B certified before you plunk down any cash.

Roberta Furger

FCC Certification—It's Not as Simple as You'd Think

You've read the warnings in the pages of *PC World* before: If you're buying a computer for home use, it must be Class B certified by the Federal Communications Commission (FCC), meaning that it won't interfere with a variety of communications—both emergency and everyday. But putting that guideline into practice isn't as easy as it sounds, especially if you're trying to save money by buying a clone system.

Take the case of Charles Eisiminger, a PC user in West Bethesda, Maryland, who was in the market for a high-end system for his home office. Mr. Eisiminger wrote to *PC World* about his quest for a reasonably priced computer that was Class B certified. But what seemed like a relatively simple purchase

wasn't so straightforward after all. Few of the mail-order companies he called could provide him with FCC ID numbers. "How can I find out which machines are FCC Class B certified?" he asked.

Intrigued by Mr. Eisiminger's letter, we decided to see for ourselves how hard it is to buy an FCC-approved computer through the mail. Just like Mr. Eisiminger's, our shopping trip proved to be somewhat less than successful.

We called 22 mail-order PC vendors looking for a 25-MHz or 33-MHz 386 computer for our mythical home office. Only two of the salespeople we spoke with told us immediately that the computers we were considering weren't Class B systems. Everyone else quickly assured us that their computers could be used in the home. One salesperson even said he could "absolutely, positively, unequivocally guarantee" that the computers were Class B systems. He couldn't, however, provide us with the appropriate ID numbers.

In fact, only six salespeople were able to give us the actual FCC identification number. The rest said they didn't have access to that information and questioned why we would want it in the first place. Although everyone agreed to call us back with the details, few were ever heard from again.

The Lesson?

Don't assume that a system has been Class B certified by the FCC just because a vendor says it's OK for home use. If you're buying the system locally, check the back of the computer for an FCC ID sticker. If you don't see one, ask. And if you're buying through the mail, ask the salesperson for the exact FCC ID number before placing an order.

Your research isn't complete when you get the ID number, though. The only way to be absolutely certain that a system is Class B certified is to verify the number with the FCC (see the sidebar *(continues)*)

Check Out Those Numbers

The FCC provides a bulletin board, the Public Access Link, for anyone wishing to check on the status of FCC certification for PC hardware. To take advantage of the service, you need a modem and a communications package, together with the FCC ID numbers provided by the PC manufacturers.

The phone number for the menu-driven BBS is 301/725-1072. You can log on at 300 or

1200 baud; parameters should be set for N-8-1.

Although this is an excellent resource, the system is not without its problems. Be prepared to try logging on several times. And although you can access the BBS 24 hours a day, users who call between 8 a.m. and 8 p.m. EST are automatically kicked off the system after 5 minutes. Log-on time is unlimited after 8 p.m.

"Check Out Those Numbers"). So we did—and found that two of the numbers we were given were not recognized by the commission.

"A lot of companies get an XT certified and then use [that number] for all their systems," says J. Jerry Freeman, national coordinator of computer marketing enforcement for the Virginia

Beach, Virginia, office of the FCC. That's because it can be both expensive and time-consuming for a company to send every model it sells through the certification process.

Although it's illegal for a company to advertise or sell a system for home use if it's not Class B certified, many compa-
(continues)



BUG WATCH

Up-to-date information about hardware and software bugs

PageMaker 4.0

PageMaker 4.0 users have had problems trying to print to non-PostScript printers when a document contains table editor files. Specifically, if more than two tables appear on a single page, the first table prints in each table location. A fix is available from Aldus via the CompuServe forum or the customer service department. CompuServe users will find the update, called PCDRV/FLT/UTILS, in Library 11. The fix is also part of the new PageMaker 4.0 Filter Driver Pack, available through Aldus's customer service department for \$25.

Aldus Corp.
206/628-2320

Fastback Plus 3.0

Version 3.0 of the popular backup utility Fastback Plus cannot restore files saved with version 2.09 or earlier. According to Fifth Generation Systems, the incompatibility results from changes made to file-compression routines and is discussed in the documentation. The company is looking into ways to correct the incompatibility but has not committed to offering a work-around.

Fifth Generation Systems
800/766-7283

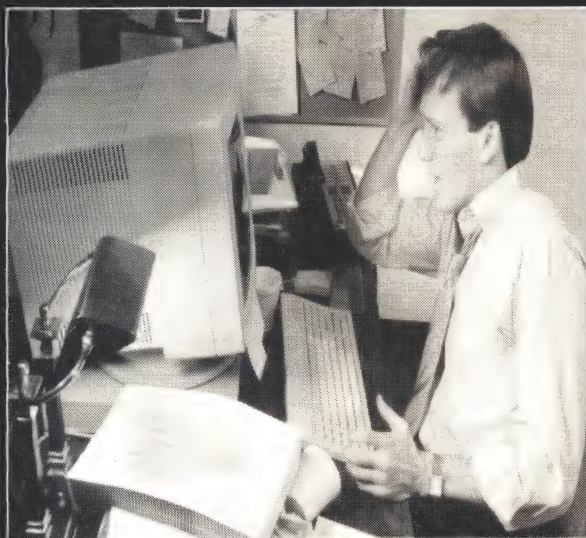
Publisher's PowerPak Adobe Type Manager for Windows

Attempting to print documents using Adobe Type Manager for Windows fonts can result in an Unrecoverable Application Error (UAE) when using a Publisher's PowerPak printer driver. The problem occurs only if you installed ATM before installing Publisher's PowerPak. To fix it, replace the lines in Windows' SYSTEM.INI file that read SYSTEM.DRV=ATMSYS.DRV and ATM.SYSTEM.DRV=SYSTEM.DRV with the single line **SYSTEM.DRV=SYSTEM.DRV**, install Publisher's Powerpak, and then reinstall ATM; you can also simply disable the Publisher's PowerPak printer driver.

Atech Software
619/438-6883

Have you run into a software bug or hardware incompatibility? Call us at 415/978-3253 with the details. We'll investigate problems and publish those of broadest interest.

So You're Feeling Squeezed



Ouch. Another typical day at the office — rush projects, training seminars, capital crunches and trade shows — just for starters. No need to panic. Now there's help.

Rent a PC or a workstation from Genstar — Apple, IBM, Compaq, Toshiba or Sun Microsystems. Get the equipment overnight and keep it as long as you want. Imagine using state-of-the-art equipment with no obsolescence worries. Plus, you can expense, rather than capitalize, to take the pinch off your balance sheet.

One call and we're on your team. Together, we'll find the best way to take the squeeze off. Call toll free today.

GENSTAR
RENTAL ELECTRONICS, inc.

1-800-422-3300 (US)

1-800-387-6646 (Canada)

1-800-361-5447 (PQ and the Maritimes)

DOS

tap tap tap
tap tap tap
tap tap tap
tap tap tap
tap tap tap
tap tap tap

Direct Access[™]

tap

Finally, a menu program that does away with the old song and dance.

Still using a chorus-line of commands to get into the programs on your hard disk? You need Direct Access.

All you do is load it and forget it. Direct Access lines up every program on a menu and lets you create custom sub-menus for related programs and other applications.

It's simple.

And it's complete. With features like user-defined screen blanking, password protection, three-level virus detection, mouse support and a unique feature that automatically tracks all time spent on your programs. A network version is also available and you can even customize

the menu with your company logo.

The choice is easy. Keep tapping away with DOS commands. Or step right into your programs with Direct Access.

Call now for complete details, volume discounts and your nearest Direct Access dealer. For a limited time, get Pyro!™, The Entertaining Screen Saver for the PC, free! Just write "Pyro" on the Direct Access registration card before you return it.



PC Magazine's Editor's Choice

nies do so without so much as a slap on the wrist from the FCC. The reason? There are just too many companies out there selling PCs to monitor all of them, says Freeman. "We could be doing this for the rest of our lives," he adds. He says the commission relies on consumers and vendors to report known violations. "Fortunately, the industry is

somewhat self-regulating. People are turning their competitors in left and right."

Given the inevitably uneven enforcement, here's what you should know about FCC certification.

Certain types of computer hardware are by their very nature considered Class A or Class B devices. All portable

units—from floppy-only 8088 laptops to high-powered 20-MHz 386SX systems—must have Class B certification, since they can easily be brought into a residential environment. Conversely, products such as high-end 486s, tower units, and network cards are typically used only for business and generally carry Class A registration.

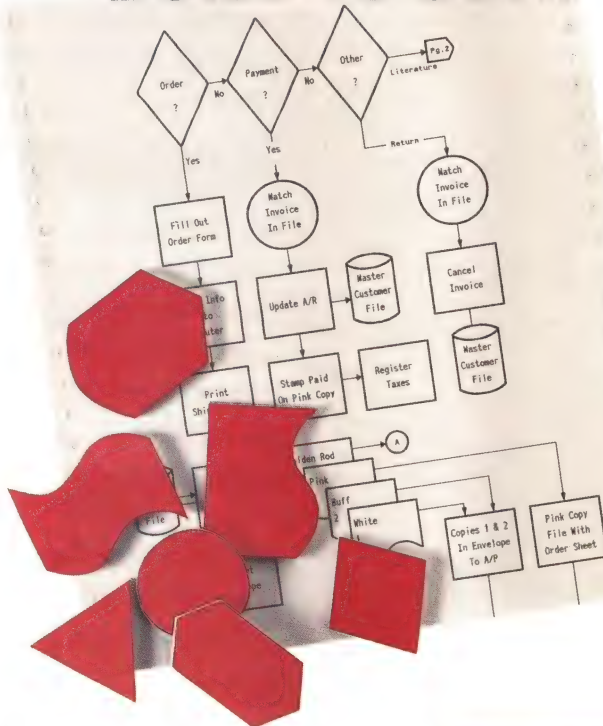
Class A units are not tested by the FCC. Class B units, on the other hand, must be tested and certified by an FCC-approved laboratory before they are allowed to carry the appropriate registration identification.

Every Class B computing device should bear a sticker designating it as such. The ID numbers are typically a string of alphanumeric characters and are determined by the manufacturer (so don't expect to see any similarity between ID numbers from different vendors).

Considering the hassles involved with verifying compliance, should you even bother checking into a PC's FCC certification? The answer is yes, and here's why.

If your PC isn't Class B certified, it can foul up the reception on your (or your neighbor's) radio, TV, or cellular (continues)

BUILD TO SUIT.



Flow Charting™ 3

Now, you can create, update and print presentation-perfect flowcharts to your specifications—in no time!

Quick to master and a snap to use, Patton & Patton's flowcharting software is the standard of both large and small businesses around the world—and is available through all major software dealers.

See your dealer today! Or, for a "live," interactive demo disk, call: **800-525-0082, ext. 2509**
International: 408-778-6557, ext. 2509



PATTON & PATTON
Software Corporation

Excellence in charting the flow of ideas!

Works on IBM & 100% compatible PC's, supports CGA/EGA/VGA and over 150 dot matrix and laser printers, with multiple print densities and 10 font sizes. **Creates multi-page charts, portrait or landscape, on most standard paper sizes.** Mouse or keyboard controlled.

IBM is a registered trademark of International Business Machines Corporation.

Circle 233 on reader service card

POWER TIP NO. 206

Automatic Sizing for ToolBook Windows

ToolBook windows will size themselves automatically around the ToolBook page each time you open a book if you place the following handler into the book's script:

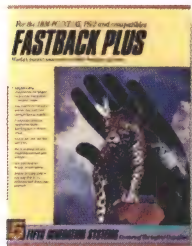
```
to handle enterBook
send sizeToPage
end
```

Jeff Day
Asymetrix
Bellevue, Washington

Introducing Fastback Plus 3.0

Users will
automatically
like it.

The rest of you
will like it because
it's automatic.



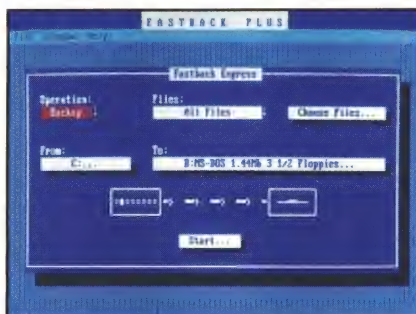
You should like it; after all, your suggestions helped design it. But we didn't stop there. After we made improvements you asked for, like a new windows-style interface, we added plenty of others.

- An archiving feature that erases unwanted files after backup
- Faster backups and restores: up to 10 mb/minute on some PCs (up to 3mb/minute on an average AT)
- Increased data compression to a full 80 percent, 15% more than version 2.1
- Appending incremental backups
- dBase III-compatible history file database lets you search for and restore specific files
- Backup support for "Bindery and Trustee" files on Novell Netware 286/386

And like all Fifth Generation products, Fastback Plus 3.0 is automatically covered by a one-year, money-back guarantee. Upgrade now for only \$49 and get FREE overnight delivery*. Just mail or fax the attached reply card with your payment to the address or fax number below. Or call us toll-free. This offer is limited to Fastback or Fastback Plus users with a valid program serial number.

If you're not backing up regularly, you either don't have the right backup program, or you don't have one at all. Fastback Plus 3.0 solves both problems with an entire program full of time and effort-saving features that make backing up so automatic, you can literally do it in your sleep.

- Scheduler and macro recorder for fully-automated, unattended backups



The new fast, simple Express Menu.

- Macro editor in plain English instead of DOS commands
- Optional password protection with DES file encryption capability
- New easy-to-use, windows-style interface with Express Menu
- Advanced error correction for recovering data from damaged disks

And these are just a few of Fastback Plus 3.0's new features. Now more than ever, there's really no excuse not to back up your data. Because if you don't want to do it, this program will do it for you. Automatically. For more about Fastback Plus 3.0, call the toll-free number below.



8 0 0 - 9 3 3 - 0 1 0 8

Fifth Generation Systems • 10049 N. Reiger Road • Baton Rouge, LA 70809
(504) 291-7221 Fax: (504) 291-5453

*U.S. destinations only. Fastback Plus 3.0 will not restore backups made with versions 2.09 or earlier.
dBase III and Novell Netware are the respective trademarks of Ashton-Tate, Inc. and Novell, Inc.

Circle 71 on reader service card

POWER TIP NO. 207

Free Your Hard Disk of Icon Libraries

If you run lots of DOS applications under Windows, you may have replaced the generic icon Microsoft supplies with snazzy images from other icon libraries, such as *Icons 300+* or the *Icon Pak* series. But using these packages can soak up a lot of disk space, as most icon collections come in the form of space-consuming EXE or ICO files. So free up some disk space by erasing the icon file once you've attached the new icon.

Robert Luhn
Contributing Editor

phone. More important, however, it can also interfere with emergency communications, costing police, fire, and paramedic services valuable time circling the block trying to find the right address because your uncertified home computer is blocking their radio transmissions.

Finally, it comes down to getting what you pay for. If you're shopping around for a computer to use at home, aren't you entitled to proof that the system you're paying thousands of dollars for has been approved for that purpose?

SHOP TALK

Good Product but Questionable Service

I purchased Atech's *Publisher's Powerpak* after reading George Campbell's article ["Easy Fonts for Great-Looking Documents," January 1991], in which it won a Best Buy. After giving the software a workout and having problems

getting the *Powerpak* driver to print in a straight line, I contacted Atech's technical support department.

I was told by the technical support staff that Atech had the same printer (a Citizen GSX-140) in-house and that it worked just fine. I was then asked to send hard copies illustrating the problems I was having. I had not heard a reply over one week after I sent in the requested information, so I called them. I was unable to reach anyone, however, and asked for someone to return my call. They called back and gave me three possible ways of correcting the problem. None of the solutions worked, and the technical support staff requested that I send both electronic and hard copies illustrating the problems I was having. I did so and still haven't heard back.

Sarah Mangum
Austin, Texas

Atech responds: While we have always made great efforts to provide cus-

Wow.



Great presentations are now as simple as pointing and clicking on icons. Because APPLAUSE II® automatically converts your data into any of 37 different chart types—including bar, line and pie charts. Word and organization charts are a snap too.

APPLAUSE II creates brilliant 35mm slides, overheads, hard copy or on-screen presentations. In black and white or your choice of up to 3.6 million colors. Eleven pre-designed color palettes make color coordination quick and easy.

Add impact to your charts and graphs with graduated backgrounds, scanned images, logos or clip art from the 700-piece library included with APPLAUSE II. Or create original graphics with its full-function drawing board.

*The demo requires either EGA or VGA card and monitor. APPLAUSE II, Ashton-Tate, and the Ashton-Tate logo are registered trademarks of Ashton-Tate Corporation. Other product names have been used for identification purposes only and may be trademarks of their respective companies. ©1991 Ashton-Tate Corporation. All rights reserved.

tomers with the best service possible, the success of *Publisher's Powerpak* and the resulting influx of technical support calls caught us off guard.

But as a result of customer feedback, Atech's technical support department was completely rebuilt on May 1. A new, highly trained technical support staff has been brought on board so customers can get the solutions they need the first time they call. If we cannot help customers immediately, we will make every effort to get back to them in one day or less with the correct solution.

As for Ms. Mangum's difficulties, we did our best to rectify her problems. Since we were unable to help her, we have offered to refund her money.

Robert McCulloch
Manager, Technical Support

Product Substitution Policy Questioned

Robert S. Davies of Pensacola, Florida, ordered a KLH laptop from Damark

International that was advertised in *PC World*. When he received the package from Damark, however, he found that he'd been shipped a Goldstar 386SX laptop instead.

In a letter to Damark, he wrote, "I spoke with customer service and was informed that your catalog states that Damark reserves the right to substitute a product of equal or better value. No such statement was made in the advertisement in *PC World*. I feel that substituting a product without the prior consent of the customer is highly unethical."

According to Joan Kaye, consumer affairs specialist for Damark International, space constraints prevented the company from noting its substitution policy in display ads, such as the one Mr. Davies read in *PC World*. She adds that Damark substitutes a product of equal or better value only when there will be a long delay in shipping the ordered product or when the ordered product be-
(continues)

POWER TIP NO. 208

Stretch for a Quick Fit With Corel Draw Clip Art

When you import clip art into Corel Draw, it's not usually sized to fit. But zooming out, shrinking or expanding the clip art, and then zooming back in wastes time. If your graphic is square, you can do a quicker job if you press <Ctrl>-Q and insert numbers either smaller or larger than 100 percent in the 'stretch horizontally' and 'stretch vertically' boxes. As long as the numbers in each box are equal, only the size will change.

Dwayne J. Sye
Swartz Creek, Michigan

How.

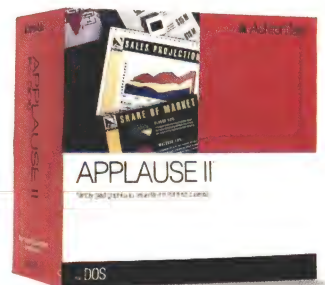
How? With APPLAUSE II! By using its WYSIWYG "windows-like" interface, you can create spectacular presentation graphics by just pointing and clicking.

PC Magazine agrees: "APPLAUSE II has a fluidity and ease-of-use not found in either Harvard Graphics or Freelance Plus."

APPLAUSE II also creates electronic screenshows with professional transition effects. Which can be run on PCs that don't have APPLAUSE II installed. There's also a spell checker, LAN capability, and

much more.

For a free demo disk,* call 1-800-437-4329 ext. 1317. Or call 1-800-2ASHTON to upgrade to new version 1.5. Call today. Wow them tomorrow.



Ashton-Tate®

comes unavailable. The company is currently developing a program of notification prior to shipment for substituted items and has begun mentioning its substitution policy in its display ads.

Should Developer Honor Out-of-Date Upgrade Offer?

I recently purchased ZSoft's *Publisher's Paintbrush* version 1.64. The box included an upgrade offer from ZSoft stating that for \$55 I could get a one-time upgrade to the latest version. So I sent in the form, along with an authorization to bill my charge card. Within a week I received a call from ZSoft saying it would cost me \$75, plus \$7 for shipping and handling, to get *Publisher's Paintbrush 2.0* (the latest version).

I feel that a software company should honor any offers that it includes in its packages.

Regi Soolook

Fairbanks, Alaska

ZSoft responds: Mr. Soolook was caught in the transition between [the discontinuation of an] old product and the introduction of a new or replacement product. ZSoft has not actively marketed or advertised *Publisher's Paintbrush 1.64* in more than 12 months.

Publisher's Paintbrush 2.0 is, by ZSoft standards, a completely new product and not an extension of version 1.64. It has undergone a complete redesign and was rewritten as a *Windows 3.0* application. Our sales staff was instructed to sell it as a new product, and an upgrade charge of \$75 was determined. Our mistake, obviously, was electing to call this new product *Publisher's Paintbrush* at all.

Even though we were diligent in working with our distributors to phase out the old product while introducing the new one into the channel, there were obviously some copies remaining on dealer shelves. Mr. Soolook purchased one of those copies containing a one-

time \$55 upgrade coupon. We will happily reimburse Mr. Soolook \$27.

Patricia E. Parker

Director of Marketing

Editor's note: Consumer Watch periodically hears from people who, like Mr. Soolook, try to take advantage of a special offer, only to find that the developer considers the offer out-of-date. While it is unavoidable to have packages on store shelves beyond an expected date, developers should make a practice of either honoring all coupons or including an expiration date.

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, 501 Second St. #600, San Francisco, CA 94107; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints and publish letters with the broadest interest. ☼

Times Like These Call For A Deal Like This.

Buy ACCPAC® BPI® Accounting ValuePak for \$595* and Save \$590.*

Just in time for the recession.



CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.

50% off a complete, integrated system combining ACCPAC BPI's General Ledger, Accounts Receivable and Accounts Payable. The General Ledger is so comprehensive it's a solution in itself. But, the ValuePak adds Accounts Receivable and Accounts Payable to create a comprehensive solution that's perfect for small to medium size businesses.



As your business grows, you can grow within the ACCPAC family which is the #1 selling accounting software in North America and backed by a network of Qualified Installers and Training Centers. Call 1-800-531-5236 for the name of your nearest CA Business Partner. Call today because while the recession may last awhile this special offer won't.

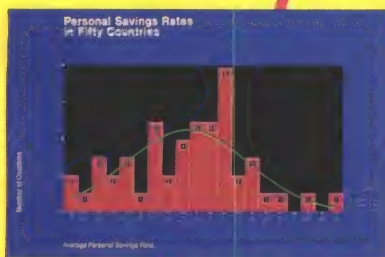


*Based on suggested retail list price. Dealer prices may vary. ©1991 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787

Bend Us. Shape Us. Any Way You Want To.

As long as you love us, it's all right. And love us you will. Statistical software from SPSS is designed to work the way you work. By giving you the power to enter, edit, manage, analyze and present data on virtually every type of PC, workstation, minicomputer and mainframe. By giving you better decision-making ability through the most comprehensive set of statistical procedures available. And by giving you a choice of options to meet your specific data analysis needs. So if you're thinking about statistical software, think about flexibility. Because flexibility means value. And when it comes to value, we top the charts.

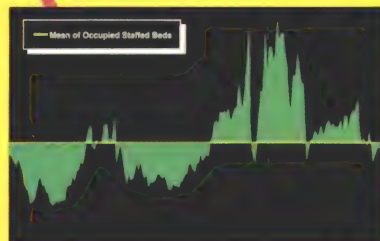
The Accessibility of SPSS makes it ideal for beginners and advanced users alike. With its straightforward menus and context-sensitive help and statistical glossary, SPSS gets you started fast. And with the help of our time-saving programming facilities, including macros and a matrix language, you'll have the power to go deeper even faster. And regardless of your experience with statistics, you'll be supported by the documentation and training that's set the industry standard for over 25 years. Documentation that INFOWORLD calls "The Best in the Business."



The Statistical Procedures in SPSS give you the power to examine data more thoroughly, revealing patterns that might otherwise go unnoticed. We offer the most in-depth group of statistical procedures available, including univariate and multivariate descriptives, model building, hypothesis testing, clustering and classification, survival analysis, time series and perceptual mapping. No matter what your question, SPSS provides the flexibility to find the answer.

The Data and File Management capabilities of SPSS give you unparalleled flexibility when preparing data for analysis. With SPSS, information can be quickly reorganized, cleaned and transformed, regardless of size or structure. Multiple missing values for nonresponses can be defined and labeled according to your specifications, while built-in controls easily manage information stored in complex file formats, including custom file formats. Self-documenting portable files give you the freedom to move your analysis from one computing environment to the next, saving time and resources. And because SPSS supports most popular microcomputer file types including Lotus®, DBF and SYLK, and offers free interfaces to such leading SQL-based database management systems as Informix™, ORACLE® and Sybase™, there's no need to re-enter data or write out intermediate files.

The Choice of Options offered by SPSS provides the flexibility to meet both your immediate and future data analysis needs. Unlike other statistical packages, we give you more than just the ability to choose between the options you may or may not need. We give you a choice of options designed to work together. Options that work as a system, providing the best possible software solution. Options for data entry and editing. Or producing publication-ready tables and reports. Options to analyze the past and help predict the future. Or to present your results with over 40 high-impact color displays, including a variety of charts and maps. No matter what you do, SPSS can help you do it better.



So if you're in the market for statistical software, keep an open mind. Go with the value of SPSS, suppliers of statistical solutions to over 2 million users worldwide. Because when you have the advantage of flexibility, the chances are you'll still be a hit tomorrow.

Call 1(800)543-5837 or FAX (312) 329-3668.



SPSS

We're Making It Easier To Decide.

Statistical Software For All Leading Computing Environments. Offices in Chicago · Washington, DC · Chertsey, UK · Gorinchem, The Netherlands · Munich · Singapore · Stockholm · Sydney · Tokyo · And Distributors Worldwide

Circle 253 on reader service card

Try it, For just \$4.95.* Plug your computer into a world of information.

The easy, cost-effective information system from National Videotex, using AT&T's state-of-the-art digital network.

*For a flat fee of \$4.95 per month, you get unlimited access to National Videotex Network, the user-friendly information exchange. This includes free access to six services provided by USA Today Decisionline, "write-your-own" classified ads, and unlimited usage of the gateway functions.

National Videotex Network users may also access the expanding number of pay-as-you-go interactive and transactional services, directories, games, stock exchanges, environmental services and more. NVTEL multi-protocol communication software available at \$14.95.



To register call 800-348-0069

MANAGER'S FILE #5

Maintenance Contracts: Yes or No?

Whether you manage a small business with just a few stand-alone PCs or a large department with dozens of computers hooked into a local area network, keeping everything running smoothly and avoiding costly and lengthy repairs is of paramount importance. As PCs are used more strategically, having a system down for a few hours—let alone a few days or weeks—is not acceptable.

Worry-Free Maintenance

Maintenance contracts, which require a service firm to handle all repairs for a set fee, appeal to many managers who don't want to worry about the logistics of getting a broken PC or peripheral fixed. Similarly, companies for which a guaranteed response time on repairs is critical but that lack in-house expertise to handle the work themselves can also benefit from off-loading the responsibility to a service firm.

"Service contracts make sense for a company with no technical support staff," says Scott Davis, who manages the roughly 100 computers at the Fred Hutchinson Research Center in Seattle. If a dealer has installed all your hardware and software, you may want to have the same dealer handle the repairs, he adds.

But service contracts aren't for everyone. Some firms prefer to develop the in-house expertise necessary to diagnose and service ailing systems—and they're finding that doing so can be cost-effective. Davis's organization, for example, was able to lop nearly \$40,000 off its annual maintenance costs simply by performing most of its repairs in-house.

Many companies are opting for a mixed approach, handling repairs on a time-and-material basis for systems

and peripherals that aren't critical, but paying for maintenance contracts on equipment that must be kept running at all times.

Service contracts are available primarily through two sources: local and national third-party maintenance organizations—such as TRW, Sorbus, and GE Computer Service—and local PC dealers. Briggs and Morgan, a St. Paul, Minnesota, law firm, contracted with a dealer to handle repairs because of the added leverage the service contract provided when making PC purchases. "It's also helped us build a closer relationship with our dealer," says MIS director Wayne Yarmoska.

But not all local dealers are equipped to handle computer repairs. Many dealers don't have the necessary parts inventory or the staff to compete with a national firm's offer of 24-hour service on a wide variety of hardware. (Be aware, however, that

many lesser-known brands of PCs and peripherals may not be serviceable through most third-party maintenance companies.) National firms also offer the advantage of being able to service a variety of locations in a consistent manner.

Regardless of whether you choose a national or local firm to handle your computer maintenance, you'll likely be able to negotiate a contract tailored to your specific needs. National firms offer clients everything from mail-in or carry-in service—for companies that simply want a consistent service provider—to 24-hour on-site repair service for mission-critical systems. In general, pricing for service varies depending on the number of units that are under contract and their density (100 units in one location are cheaper than 100 units divided among four offices, for example). You can also expect to pay more for quicker response times. ☹

Is a Maintenance Contract Right for You?

Consider a full-blown maintenance contract on all hardware if...

- ✓ A guaranteed response time is critical.
- ✓ You have several sites and want to ensure consistent service.
- ✓ Your company lacks the technical expertise in-house to diagnose problems and repair systems.
- ✓ You don't want to be in the business of computer support.
- ✓ The size of your company does not justify an in-house support person.

Investigate a contract for critical systems only, such as file servers, if...

- ✓ You have a majority of newer, more reliable systems and peripherals.
- ✓ You can rely on prompt service through a local repair center on a per-incident basis.
- ✓ Your company has enough computers to justify a support person and you want to manage your own repairs.



How to spot th





very best PCs.



It's really quite easy. Just look for PCs that have a genuine Intel microprocessor inside. Either the Intel386™, Intel386™SX, Intel486™ or Intel486™SX microprocessor.

Intel is the world's leader in microprocessor design and development. In fact, Intel introduced the very first microprocessor. So with Intel inside, you know you've got unquestioned compatibility and unparalleled quality. And you'll

know you're getting the very best PC technology.


So look for the Intel Inside symbol on ads for leading PCs. It'll show you've got an eye for spotting the best.

intel®

The Computer Inside.™

Intel386, Intel486 and the Intel Inside logo are trademarks of Intel Corporation. All rights reserved. ©1991 Intel Corporation.

Circle 109 on reader service card



As little as you need to get started.
As much as you want to keep growing.

Presenting The Platinum Series for expandable accounting.



Better Information —Better Decisions.

However you define it, success depends on your ability to gather accurate information and evaluate results. Better information means better decisions. And Platinum® helps you make better decisions.

Platinum is a unique modular accounting and management information software package designed to better your business.

Start Small—Branch Out.

Platinum was designed for uncompromised power and extraordinary flexibility. From two to 22 fully inte-

grated modules can be used in any combination, so Platinum can start small, grow with you and be customized in the future. Its functions range from basic bookkeeping to sophisticated management accounting (in DOS, OS/2® and LAN versions). What's more, Platinum expands easily from a single user to a network of many users.

Power and Performance.

Platinum offers superior performance, speed and capacity. In fact, no matter how many modules you use and how large the network becomes, the power of Platinum remains uncompromised.

Most important, Platinum

offers the service and support of IBM's network of authorized Platinum dealers and installers.

In a nutshell, nothing grows with your business like Platinum.



Desktop Software

IBM and OS/2 are registered trademarks of International Business Machines Corporation.
Platinum is a registered trademark of Advanced Business Microsystems, Inc. © 1991 IBM Corp.

Circle 97 on reader service card

INDUSTRY IO OUTLOOK

Edited by ERIC BENDER

Are Shell, Task Swapper Worth the Trouble?

Users Give Thumbs-Up to DOS 5.0

Wanted: More Automation for Memory-Tuning Tricks

To avoid the problems plaguing the last major release of DOS, Microsoft sent out more than 7000 beta copies of DOS 5.0. Early adopters agree that the new release offers plenty of advantages to just about every user—although they also have some quibbles.

"DOS 5.0 does right what 4.0 tried to do," sums up Rich Eisenman, information systems manager at Manufacturers Hanover Trust, in New York.

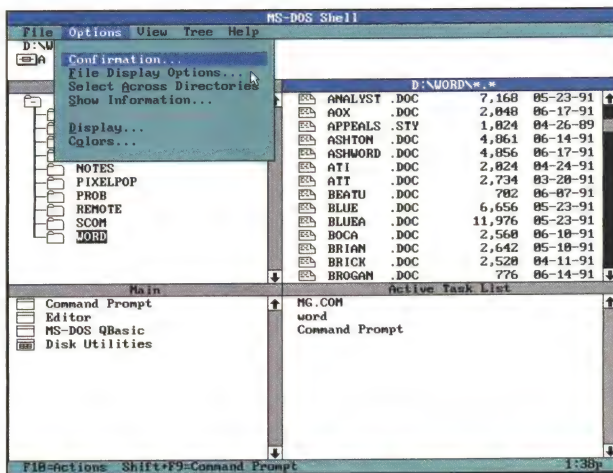
Thanks for the Memory

Early users cite better memory management as 5.0's biggest benefit. "It runs like gangbusters on a 286," says Bruce Gavin of Online Reference in Colorado Springs. DOS 5.0 "takes the place of other utilities; it lets you see what's loaded and where."

While users are unanimously pleased to be able to load most of DOS in high memory, many griped that memory optimization isn't automatic, as in packages such as Quarterdeck's QEMM. "You can do it manually with 5.0, by trial and error, but unless you're an advanced user and completely understand what you're doing, it's confusing to know what [memory-resident programs] to load first and where," says Eric Rintell, a Lawrence, New York, computer consultant.

Adding Greater Utility

Most users are impressed with a variety of small but helpful gains. These include a



Early adopters say DOS 5.0's revamped shell and other aids like on-line help will simplify usage, especially for novices.

shell with task switching; powerful new commands; on-line help; and a full-screen text editor that replaces (but does not eliminate) the notorious EDLIN.

Among the enhancements, DOS 5.0's shell and task swapper receive the most mixed reviews. It's generally accepted that the Windows-like shell will make things easier for novice users. However, praise for the way DOS 5.0 lets you switch between applications is not exactly resounding. Michael Sheafe, senior instructional designer at American Express's Strategic Operations in New York, finds this capability very attractive for 8086s or machines not running Windows. But "it's a little poky because everything has to be written to disk," says Paul Cassel, an Albuquerque small systems consultant, who maintains that closing one application and opening another

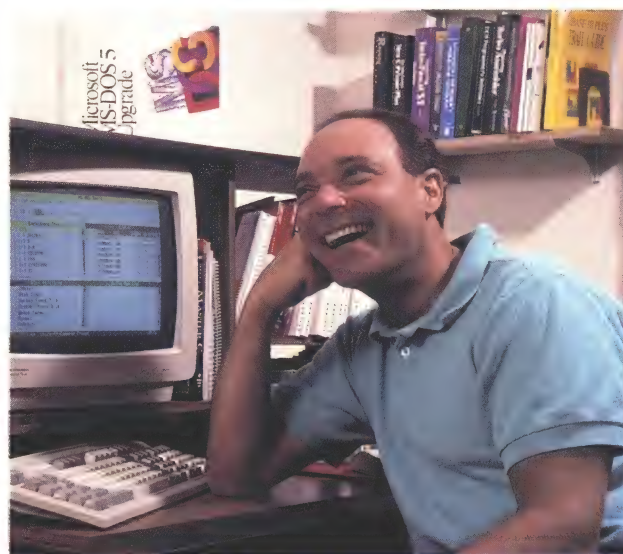
is almost as fast.

Cassel gives 5.0's UNDELETE command high marks: "It's beyond simple." Sheafe finds the improved DIR command a nice detail because it lets him know how many bytes

are free and how many each subdirectory is using. Gavin finds that DIR's new ability to sort files by size, date, or extension makes it easier to move files from a floppy to the hard drive. Users also say that DOSKEY, which lets you retrieve or record command-line keystrokes, should prove helpful even for novices. On-line help is a big plus, they declare.

The reviewers roundly praise 5.0's ease of installation. "There were no surprises," says Sheafe. He is particularly struck by the UNINSTALL feature, which let him save his old DOS until he was sure he'd have no problems with the new.

Cassel complains, however, that DOS 5.0 ships without a bootable disk. He is concerned that if his clients lose the ability to boot from the hard disk, they will find nothing when they look in the Microsoft package. "Of course people can make their own boot disk after they install it, but people don't do that," Cassel says. —Kathleen A. Gow



Consultant Paul Cassel approves of UNDELETE and other DOS 5.0 enhancements but finds the task swapper "a little poky."

STEPHEN MARKS

Palmtops Give Strong Grip on Information

Users Customize Software for Under-a-Pound PCs



Featherweight palmtop computers are quickly becoming "an integral part of the manager's arsenal," says Eaton's Bob Martin.

As director of finance for a Cambridge, Massachusetts, management consulting firm, Leo Boudreau knows the heartache and backache of schlepping a packed briefcase, a bulky garment bag, and a laptop PC through airports. His worst experience came while running to catch a plane: Security guards forced him to plug in and boot up to prove his laptop wasn't a bomb.

Boudreau's burden became more manageable when he traded the laptop for an 11-ounce Hewlett-Packard 95 LX. He's not exactly doing an O. J. Simpson through airports, but the new palmtop PC does make it considerably easier to run—either a spreadsheet or to catch a plane.

PC (Not Terminal) in Hand

Hand-held computers are not new. But until recently they were primarily data gatherers in the hands of meter readers and grocery clerks.

Today, advances in read-only memory, memory-card storage, and powerful proces-

sors have supercharged small PCs so that a wider number of users can compute—not just gather info—sans desk or even lap. The 95 LX, Poqet Portable PC, and Atari Portfolio are full-fledged PCs with DOS, a full complement of desktop utilities, and even applications stored in ROM for instant computing. Prices are all over the map—\$795, \$1450, and \$300 respectively, for these palmtops—seemingly without correlation to features, and you still need to add a \$100 to \$200 pocket modem. But price doesn't seem to be an issue for professionals on the run who need information at their fingertips.

In Boudreau's case, that means working the numbers on the 95 LX's built-in copy of 1-2-3. For Bob Martin of Eaton Corporation, in Cleveland, it means being able to quickly check his electronic phone book or appointment calendar. Martin, manager of executive support systems for the 40,000-member firm, is also developing 1-2-3 templates for

executives at Eaton to use as they move from meeting to manufacturing site.

"This [palmtop system] will become an integral part of the manager's arsenal," predicts Martin, whose first purchase of a couple dozen 95 LXs could grow to hundreds. Some managers are already using the 95 LX for quick on-site analyses that formerly had to wait for desktop crunching.

This is where Sharp Wizard-type organizers get left behind, users say, because they lack the power for spreadsheet analysis, data base maintenance, and E-mail fetching. The Poqet and Atari Portfolio have XT-class processors, while the 95 LX's NEC chip has about two and a half times that power.

Getting the Message

Poqet is working with Infonet Services, to provide messaging services in some 40 countries for visiting businesspeople. Poqet owners can use local phones to access or send data files and faxes via the Infonet

system to their own companies, or to other subscribers to information/mail utilities.

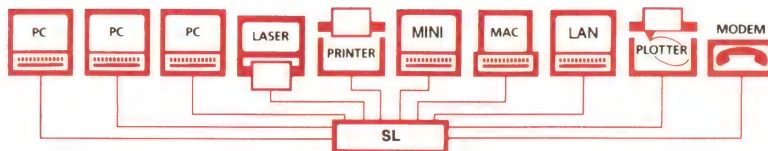
When the Portfolio and the Poqet are employed this way, rather than as laptop replacements, their screen and keyboard shortcomings are no longer important. All palmtops sport QWERTY keyboards, good for little more than one-finger pecking, and low-contrast, nonbacklit liquid-crystal displays. No matter, say users, who put a higher premium on palmtop size, light weight, and long battery life. Palmtops offer 60 to 100 hours of continuous operation on a couple of easily replaceable penlight batteries and fold up to fit in pocket or purse. At 1 pound, the Poqet and Portfolio are a little heavier than the 95 LX.

Thanks to standardized RAM and ROM cards, companies can assemble custom suites of applications for their traveling professionals. Warner Brothers has given Poqet PCs to 20 globe-trotting salespeople. In addition to Poqet's usual software, the palmtops carry a memory card that holds contracts, a 100K data base of film, and a list of royalty rates. —Mike Hogan

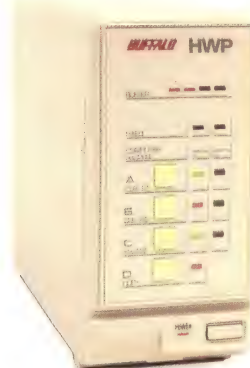


Selling like hotcakes since its introduction this spring, Hewlett-Packard's \$795 95 LX has redefined the palmtop market.

Big Business Productivity For Small Workgroups



- * Pop-up Menu & Windows Option
- * Easy to Install and Use
- * Rapid Data Transfer
- * User Upgradable Memory
- * Reliable Automatic Switching
- * No PC RAM Memory Required
- * Toll-Free Technical Support
- * 45-Day Money-Back Guarantee



Printer Sharing Solutions

Model Name	Total Ports	PCs/ Printers	Memory Available	Printer Selection	Price \$ / Buffer
SL	10 6 Ser., 4 Par.	Any Combination	256KB - 4MB	Pop-up Menu	\$495 / 256KB \$595 / 1MB
SLP	10 8 Par., 2 Ser.	Any Combination	256KB - 4MB	Pop-up Menu	\$495 / 256KB \$595 / 1MB
HXM	4 2 Ser., 2 Par.	Any Combination	256KB - 16MB	Pop-up or Buttons	\$295 / 256KB \$395 / 1MB
HXS	4 Serial	Any Combination	256KB - 16MB	Pop-up or Buttons	\$295 / 256KB \$395 / 1MB
HWP	5 Parallel	3/2 4/1	256KB - 16MB	Pop-up or Buttons	\$295 / 256KB \$395 / 1MB
HXP	4 Parallel	2/2 3/1	256KB - 16MB	Pop-up or Buttons	\$245 / 256KB \$345 / 1MB
HCP	2 Parallel	1/1	256KB - 16MB	One Printer	\$225 / 256KB \$325 / 1MB
AS-41	5 Parallel	4/1	None	One Printer	\$195
AS-31	4 Parallel	3/1	None	One Printer	\$175

Save Money by Sharing Office Resources:

Printers and other expensive peripherals are idle the vast majority of the time. Buffalo boxes facilitate efficient utilization of these devices, and reduce the need to purchase more of them.

Buffalo boxes further improve productivity by allowing easy user access to all shared peripherals. With a buffer, all users can simultaneously send print data and quickly release their PCs to continue working.

BUFFALO

US and Canada Toll-Free:
(800) 345-2356

Fax (503) 585-4505

Buffalo Products, Inc.

2805 19th St. SE, Salem, OR 97302-1520

PC Price Wars Keep Growing Sharper

Many Savvy Customers Turn Away From Dealers

A 486 PC for \$3000. Too good to be true? Not any longer. From Compaq to IBM to the littlest clone maker in Taiwan, PC vendors keep slashing prices to give buyers some of the best hardware deals ever.

The floor fell out last spring when Compaq cut prices as much as a third. IBM and the rest of the PC-selling hierarchy soon followed suit. By June, direct-mail vendors on the lowest rungs were cutting a couple of hundred dollars off price tags. (For a detailed analysis of current PC pricing trends, see *PC World Market-place*.)

So now's the time to buy, right? Maybe. But prices should continue to drop through year-end. Increasingly savvy buyers, recession, competition from new sources, a glut of high-powered machines in the United States,

and slower PC sales overseas will make vendors eager to deal. Fall will see additional pressure as volume shipments start on Intel's new 20-MHz 486SX and the 386 clone processors from AMD.

The latest wave is "a function of the market maturing in a number of ways," says Bruce Stephen, analyst with International Data Corporation in Framingham, Massachusetts. "There's a more sophisticated base of customers who've been buying PCs for five years or more. They're no longer willing to pay premium prices for mainstream PC products. As a result, brand loyalty is tenuous."

Buyers Take Direct Action

If brand loyalty is wavering, loyalty to the dealer channel is disappearing. Most traditional resellers are seeing scary

profit and little growth margins; Businessland, perhaps the most influential chain until recently, is escaping Chapter 11 only by selling out. The share of PCs sold by dealers will plummet from last year's 62.1 percent to 49.1 percent in 1993, IDC predicts.

"The superstore phenomenon hurt people like Businessland that said computers were a specialty item, because the superstore says it's just a commodity," says Rob Cheng, director of marketing for Gateway 2000. The direct-mail vendor in North Sioux City, South Dakota, expects to post sales of over \$500 million this year. Whether computers are a commodity depends on the user's application and expertise, notes Cheng, but buyers are increasingly knowledgeable about their needs.

"They know what they've got in their systems, and they recognize the brand names of components such as hard drives, graphics cards, and motherboards," says Valerie Paxton-Maloney, marketing director at Insight Computers in Tempe, Arizona. "And they realize they can buy a lot cheaper direct."

"If I have my way, there won't ever be an IBM in here," says Barry Cook, computer resource analyst in the Colorado Springs office of Mantech Advanced Systems. The office bought four Insight PCs and plans to buy more.

Sandi Graham, network services supervisor for Franklin Federal Bank in Austin, Texas, is another of this new breed of savvy buyer. "We're trying to become self-sufficient," says Graham, whose firm has some 400 PCs installed. "We've decided to re-

place our video cards, hard drives, and floppy disk drives. We did the last two network upgrades on our own."

The top four criteria Graham considers when PC shopping are quality of components, service, price, and dependability. Austin Computer Systems, an aggressive mail-order firm, met those requirements, and Graham is now replacing IBM PS/2s with Austin PCs.

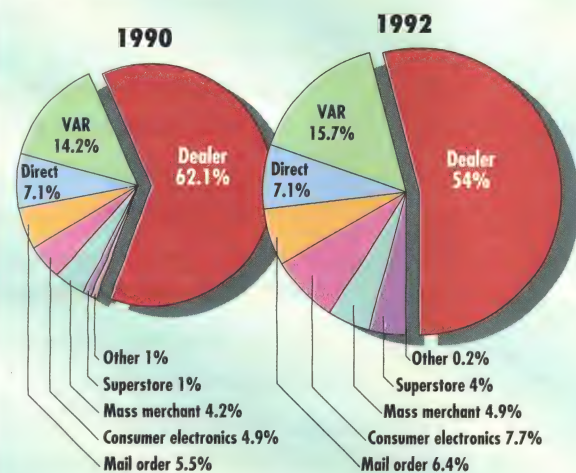
While customers may worry that lower prices mean poor product support, that's not necessarily true. Says Graham of Austin's service: "They've put every vendor we ever dealt with in the shade."

—Russell Glitman

Kathleen A. Gow is a freelance writer based in Medford, Massachusetts.

Dealers Lose Sales to Other Channels

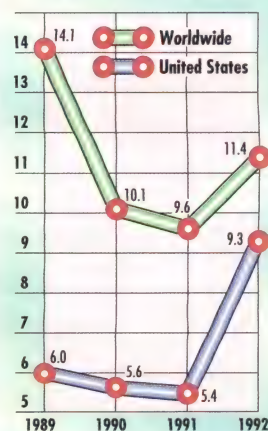
U.S. unit shipments by channel



Vendors such as Compaq that sell almost exclusively through traditional dealers are seeing an increasing threat from inexpensive PCs sold through outlets with less overhead. International Data Corporation figures show dealers' share of the market steadily dwindling, direct-sale suppliers like Dell holding their own, and all other channels increasing.

Market Growth Slows, Especially in United States

Percent growth in PC unit shipments



While PC shipments keep rising, estimates from Dataquest show the market growing less quickly, accentuating pricing pressures. But the market researcher is optimistic that shipments will climb faster in 1992. This year 11.8 million PCs will ship in the United States, 26.3 million worldwide.



What gives you icons and folders, is easier than Windows, and comes with \$25 back?

NewWave for Windows

Until now, if you wanted a PC desktop that's as easy to use as a Mac, you've been left in the dark.

But now you can add HP NewWave to Windows for a simpler desktop. It turns all your DOS and Windows files and programs into icons. Then lets you group them in folders, by project, the way you do on your real desktop.

A file and its program are automatically linked. They open simultaneously. You save steps, and never have to worry about

where things are on your PC.

The result? Your work is easier to organize and faster to complete. All for about the cost of a mouse.

Best of all, this is just one of the advantages that made NewWave *PC Magazine's* "Environment of the Year."

Buy it at your dealer today. Our \$25 rebate offer is about to end.



**HEWLETT
PACKARD**



Buy now and get \$25 back

Purchase HP NewWave between 8/1/91 and 10/31/91, then send this coupon, original product registration card, and your original sales receipt to HP Program Awards Center, P.O. Box 59058, Minneapolis, MN 55459-0058. Must be postmarked by 11/15/91.* Suggested Retail Price \$195. Actual price may vary.

Name & Title

Company

Phone

Street Address

City, State, Zip

Want to learn more? Get our interactive demo disk (\$3.95 handling charge)

Call 1-800-345-9111 x 23B1

Dealers of HP products and their employees not eligible. Allow 6-8 weeks for your check to arrive.



The AST Premium II 486SX/20 and Dell 320LT were the most aggressively priced desktop and portable PCs in the latest survey by International Data Corporation.

BARGAINS OF THE MONTH

Best-Sellers

Leading PCs sold through traditional computer channels

- | | |
|------------------------------|------------------------|
| 1 IBM PS/2 Model 55 SX | 6 NEC PowerMate SX |
| 2 IBM PS/2 Model 70 (20 MHz) | 7 IBM PS/2 Model 50z |
| 3 Compaq LTE 386s/30 | 8 Compaq Deskpro 386n |
| 4 Compaq Deskpro 386s | 9 AST Bravo/Premium SX |
| 5 IBM PS/2 Model 30-286 | 10 Compaq 386/20e |

The PS/2 Model 55 SX still easily led sales through dealers, and the repriced PS/2 Models 30-286 and 50z also sold well, in Store-board/Computer Intelligence's latest survey.

Over the Counter

What you pay at retail stores for popular PCs

80386SX-based desktop PCs

	Configuration				National			Boston	Chicago	Dallas/Ft. Worth
	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	List	Average	Low			
AST Bravo/386SX	16	2	40	VGA	\$2845	\$2162	\$1585	\$2268	\$2088	\$2276
Compaq Deskpro 386s	16	2	40	VGA	\$2399	\$1884	\$1535	\$1945	\$1824	\$1787
Compaq Deskpro 386s/20	20	2	60	VGA	\$2899	\$2264	\$1855	\$2345	\$2325	\$2198
Dell System 320 LX	20	1	40	VGA	\$2100	\$2100	\$2100	\$2100	\$2100	\$2100
Epson Equity 386SX/20 Plus	16	2	40	VGA	\$3449	\$2598	\$1795	\$2653	\$2609	\$2605
IBM PS/2 Model 55 SX-061	16	2	60	VGA	\$2945	\$2225	\$1849	\$2208	\$2255	\$2283
NEC PowerMate SX/20	20	2	42	none	\$2799	\$2058	\$1449	\$2043	\$2080	\$2036

80386DX-based desktop PCs

AST Premium 386/25	25	2	110	VGA	\$5595	\$4183	\$2495	\$4431	\$4031	\$4476
Compaq Deskpro 386/33L	33	4	120	VGA	\$6199	\$4793	\$3967	\$5098	\$4980	\$4842
Dell 333P	33	4	100	VGA	\$3000	\$3000	\$3000	\$3000	\$3000	\$3000
Epson Equity 386/25 Plus	25	2	100	VGA	\$4749	\$3557	\$2992	\$3667	\$3589	\$3157
IBM PS/2 Model 70-A21	25	2	120	VGA	\$6445	\$4886	\$4125	\$4876	\$4834	\$4785
Tandon 386/33	33	4	110	VGA	\$3079	\$3079	\$3079	\$3079	\$3079	\$3079
Tandy 4033 LX	33	2	105	VGA	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898

80486SX-based desktop PCs

ALR BusinessVEISA	20	1	80	none	\$3495	\$2649	\$2029	\$2651	\$2647	\$2534
AST Premium II 486SX/20	20	4	80	VGA	\$3695	\$2832	\$1449	\$3004	\$2799	\$2679
IBM PS/2 Model 90XP-OG5	20	4	80	XGA	\$8345	\$6422	\$5842	\$6352	\$6321	\$6050

80486DX-based desktop PCs

AST Premium 486/25E	25	4	110	VGA	\$8595	\$6575	\$5157	\$6819	\$6910	\$6876
Compaq Deskpro 486/33L	33	4	120	VGA	\$10,099	\$7799	\$6362	\$8051	\$8198	\$7701
IBM PS/2 Model 95 XP	33	4	320	XGA	\$16,445	\$12,492	\$10,525	\$11,587	\$12,749	\$11,898
NEC PowerMate 486/25E	25	4	140	none	\$9899	\$7419	\$5395	\$7226	\$7781	\$7189

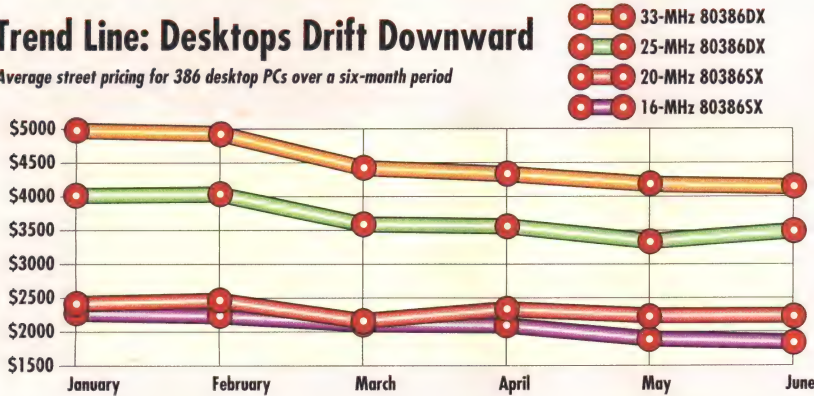
Portables/laptops

Compaq LTE/286	12	640K	20	CGA-LCD	\$2499	\$2024	\$1714	\$2005	\$1989	\$1937
Compaq LTE 386s/20	20	2	30	VGA-LCD	\$4399	\$3671	\$3000	\$3645	\$3602	\$3450
Dell 320LT	20	2	40	VGA-LCD	\$3299	\$3299	\$3299	\$3299	\$3299	\$3299
Epson Equity LT-386SX	16	2	40	VGA-LCD	\$3998	\$3039	\$2559	\$3087	\$3171	\$3009
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	\$5995	\$4556	\$3837	\$4616	\$4462	\$4646
NEC Ultralite 286F	12	1	20	CGA-LCD	\$2799	\$2031	\$1600	\$1697	\$1845	\$1879
Toshiba T1200XE	10	1	none	CGA-LCD	\$2299	\$1816	\$1449	\$2187	\$2093	\$1709
Toshiba T2000SX	16	1	40	VGA-LCD	\$3749	\$2963	\$2399	\$3195	\$3287	\$2878
Zeos Notebook 286	12	1	20	VGA-LCD	\$1995	\$1995	\$1995	\$1995	\$1995	\$1995

From an IDC survey of more than 180 computer dealers in eight metropolitan areas. Figures based on at least four price quotes for each machine. Prices are based on manufacturer's standard configuration without monitor. *IDC was unable to collect enough price quotes for this model in this metropolitan area due to limited dealer coverage.

Trend Line: Desktops Drift Downward

Average street pricing for 386 desktop PCs over a six-month period



Pricing in the core of the marketplace—desktop 386 machines—has dropped substantially this year, according to IDC's PC Pricing Report. And the latest models often include more memory and larger hard drives. While prices began to stabilize in late spring, analysts predict another round of significant cuts this fall.

Metropolitan

Los Angeles	Miami/Ft. Lauderdale	New York	San Francisco Bay Area	Washington, D.C.
\$2120	\$2424	\$1847	\$2099	\$2182
\$1878	\$1898	\$1947	\$1931	\$1976
\$2345	\$2276	\$2347	\$2489	\$2298
\$2100	\$2100	\$2100	\$2100	\$2100
\$2423	\$2656	\$2518	\$2348	\$2583
\$2231	\$2188	\$2311	\$2137	\$2062
\$2099	\$2020	\$2172	\$2141	\$1816

\$3987	\$4389	\$3536	\$4127	\$4288
\$5053	\$4856	\$4098	\$4775	\$5123
\$3000	\$3000	\$3000	\$3000	\$3000
\$3381	\$3426	\$3918	n/a ¹	\$3440
\$4756	\$4702	\$4300	\$4436	\$4376
\$3079	\$3079	\$3079	\$3079	\$3079
\$5898	\$5898	\$5898	\$5898	\$5898

\$2717	\$2647	\$2482	\$2491	\$2857
\$2845	\$2891	\$2392	\$2722	\$3017
\$6384	\$6509	\$6653	\$6702	\$6509

\$6296	\$6860	\$6338	\$6339	\$6599
\$7765	\$7634	\$8038	\$8045	\$8397
\$11,436	\$12,181	\$12,138	\$12,320	\$13,145
\$7424	\$7114	\$7870	\$7567	\$6718

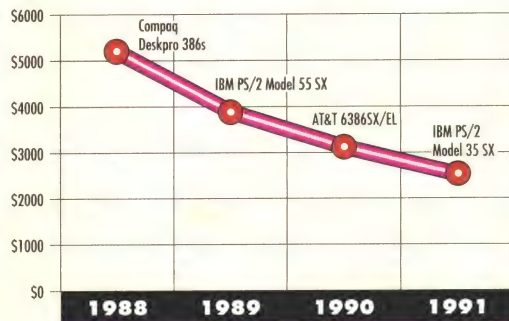
\$2035	\$2020	\$2056	\$2003	\$2071
\$3545	\$3487	\$3601	\$3614	\$3577
\$3299	\$3299	\$3299	\$3299	\$3299
\$2859	\$3079	\$3174	\$2849	\$3023
\$4353	\$4696	\$4653	\$4594	\$4247
\$2208	\$2251	\$2221	\$2109	\$1699
\$1912	\$1938	\$1767	\$1891	\$1672
\$3655	\$3685	\$2869	\$3084	\$3752
\$1995	\$1995	\$1995	\$1995	\$1995

PC Futures: Reaching a Lower Plateau

AST's Premium II 486SX/20 repeats as the desktop Bargain of the Month,² while Dell's 320LT led the pack as portable Bargain of the Month. IBM's PS/2 Model 55 SX still sold more than twice as many units as any other PC, but its dominance will diminish now that IBM is offering three additional 386SX models (see "IBM's Counter-Clones" in this issue). Pricing pressures remain strong throughout the industry (see "PC Price Wars Keep Growing Sharper" in this issue). Vendors cleared inventory for the slow summer season by offering fire-sale pricing on machines that are being phased out, such as the PS/2 Model 50z. Volume shipments of new chips (particularly Intel's 486SX) should lean further on prices this fall. However, year-to-year improvements in price/performance are sticking close to the industry's historic trends, as introductory costs for SX-based PCs demonstrate.

SX-Based Systems Make Steady Gains in Price/Performance

List prices for selected entry-level 386SX PCs at midyear debuts



A traditional rule of thumb has PCs gaining about 20 percent in price/performance annually. Popular 386SX systems generally stick close to that line, sometimes doing even better when more powerful base configurations are taken into account.

² Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.

THE SUPER-FAST NEC CDR-36 WITH FREE CLIP ART 3-D!

Never before has such an unbelievable offer been made on quality CD-ROM readers. NEC is a leader in computers and peripheral technology, so you know that you're getting the most advanced, trouble-free device available. The CDR-36 is now just \$499. That's it. You're ready to enter the world of CD-ROM affordably!

The CDR-36 is ultra light and easy to move around. At just 2.2 pounds, it's about the size of a hardcover book, but this quality instrument connects your PC or laptop to the most impressive type



library available. And Tiger offers you great prices on PostScript and LaserJet compatible typefaces. Get all the flexibility and creative power of a personal electronic type house: hundreds of classic, contemporary and specialty faces on one CD.

The Fastest in the Business: The CDR-73.

We've also got the CDR-73 in stock and ready to ship. This is the CDR-36's bigger brother, with more speed and power for more demanding users. Call us today for to find out how NEC, Tiger and the vast capabilities of CD-ROM can change the way you use your computer.

FREE \$399 CLIP ART 3-D DISC! With Access to 2500 True 3-D Images.



Clip Art 3-D is the most creative collection of images you'll ever find. Over 50 categories of high-quality, digitized color images — all in brilliant three-dimensions! Choose from a palette of over 16 million colors to enhance images. You have complete and instant control over the size, perspective, and lighting. Easily move and combine images and much more. Each image is stored in multiple formats including TIFF, EPS, PICT, and WMF for quick and simple downloading to desktop publishers.



NEC DESKTOP PUBLISHING

CD ROM technology can instantly transform your PC into a complete graphic design studio. Need a photo? Choose from over 5500 professional black-and-white and color shots, or 5300 designs, illustrations and 3-D images — all fully compatible with leading desktop publishing packages.

2800 Designs and Illustrations.

Image Gallery gives you a wealth of art from professional designers and illustrators, encompassing a broad range of techniques and styles. Select from dozens of categories and preview images on your screen. Compatibility with all leading desktop publishers and word processors.

Over 1500 Professional Photos.

A picture's worth a thousand words. Add power and impact to anything you print in house with NEC's *Photo Gallery*, a collection of B&W photography from UNIPHOTO.

Authorization and/or color transparencies for all other uses may be obtained from UNIPHOTO for a reduced licensing fee.

4000 Full-Color Photos.

Image Folio features an incredible collection of professional photographs in dazzling color. Dozens of categories, from nature, business, and beautiful locations to holidays, celebrations and special effects. *Image Folio* also contains advanced paint tools.

1000 Typefaces on a Single CD.

The most extensive collection of typefaces available anywhere! CD-ROM Technology allows you to access 1000 individual typefaces

from a single CD-ROM (rather than gobbling up precious space on your hard disk) and instantly access them for use in letters, reports, newsletters, brochures — anything you publish. These high quality typographic libraries are compatible with virtually all desktop publishing systems and not imitations — they are licensed by Adobe Systems Incorporated from famous type foundries such as ITC, Linotype AG, Bigelow and Holmes, Letraset and others.

HOT CD-ROM TITLES FROM JUST \$29.95 EACH!

Each title below is priced from just \$29.95 when you buy an NEC CD-ROM reader. Retail values range from \$99 to \$349. Ask about our savings pack on ALL titles.

Complete 21-Volume Illustrated Encyclopedia. Features the entire text of a 21-volume encyclopedia (9 million words) — stored on a single CD! More than 30,000 articles enrich this highly regarded reference. (Reg. \$395.00)

Complete Reference Library. Includes *Webster's New World Dictionary, Third College Edition*, *Webster's New World Thesaurus*, *Webster's New World Dictionary of Quotable Definitions*, *The New York Public Library Desk Reference*, *Dictionary of 20th Century History*, *J. K. Lasser's Legal and Corporation Forms for the Smaller Business*, *Guide to Concise Writing*, and *The National Directory of Address and Telephone Numbers*. (Reg. \$159.95)

Multi-Media Birds of America. Each bird has a fascinating story told by James Audubon, including its habitat, range, and other details. (Reg. \$99.00)

Guinness Disc of Records. Learn from sections like

The Living World or Human Achievements. View photographs, listen to music and sound effects, or run an animation. (Reg. \$149.00)

Shakespeare on Disc. All of William Shakespeare's works, in-

\$399

Interface kit must be purchased separately.

cluding plays, poems, and sonnets in both Queen's English and modern versions. (Reg. \$99.00)

Sherlock Holmes on Disc. The entire treasury of Sir Arthur Conan Doyle's classics. (Reg. \$99.00)

A Unique Time Table. A chronological perspective on the history of human events. (Reg. \$99.95)

U.S. History. Detailed coverage on political, aerospace, geographic, social, military and economic history. (Reg. \$395.00)

World and USA Atlas. Atlas, almanac and world fact book in one. Over 240 detailed, EGA/VGA maps. (Reg. \$159.95 & \$99.95)

CD Game Pack. Includes *The Chessmaster 2000*, *Bruce Lee Lives*, *Beyond the Black Hole*, *Gin King-Cribbage King*, and *Life & Death*. (Reg. \$99.95)

Mammals. From the pages of National Geographic, photos, animation, facts on mammals. (Reg. \$149.00)

Time Compact Almanac. NEW! Millions of facts and figures, comparisons, rankings, annual averages and other information. (Reg. \$159.95)

Britannica Family Choice. Berenstain Bears, History, Designasaurus. (Reg. \$199.00)

Magazine Rack. Over 100,000 full-text articles from over 300 magazines. (Reg. \$89.95)

Bible Library. Enter word or verse and the reference is instantly on-screen! (Reg. \$149.00)

Family Doctor. Complete guide to your family's health, fitness and nutrition. (Reg. \$149.00)

OUR "NO DOWN-TIME" GUARANTEE.

It's our iron-clad guarantee to our customers. If your NEC CD-ROM reader ever fails to perform, we'll send you a new one on the spot. No hassles. Just call us and your replacement unit is on the way.

NEC CD-ROM

AR9036 CDR-36 Reader w/FREE Clip Art 3-D . \$399.00

Complete Interface Kit, \$159.00, (specify XT/AT, PS/2, NEC Prospeed, Mac or parallel SCSI kit)

AR9073 CDR-73 Reader
instead of CDR-36 Add \$399.00
Internal reader available — please call.

NEC TYPE GALLERY

AR8440 Type Gallery PS Premium, all 1000
PostScript Typefaces (\$15.99 ea.) . \$15,995.00

FREE CDR-73 & interface w/Type Gallery Premium PS!

AR8420 Type Gallery PS, license to use any 15
of 1000 typefaces on disc (\$26.60 ea.) . \$399.00

AR8000-2 Type Gallery LJ, license to use any 12 of 76
AGFA PCL Typefaces (\$24.92 ea.) . \$299.00

NEC DESKTOP PUBLISHING

AR8200 Clip Art 3-D, 2500 color images . \$399.00

AR8000-4 Photo Gallery, 1500 stock photos . \$399.00

AR8320 Image Gallery Premium,
2800 Metro Images (\$0.25 ea.) . \$719.00

AR8000-3 Image Gallery, any 600 on CD
(ea. \$0.67) . \$399.00

AR8000-1 Image Folio, 4000 stock photos . \$399.00

ALL CD-ROM TITLES LISTED BELOW FROM JUST \$29.95

When you purchase an NEC CD-ROM reader.

AR8510 Illustrated Encyclopedia . \$39.95

AR8520 Reference Library . \$29.95

AR8530 USA Atlas . \$29.95

AR8540 World Atlas . \$29.95

AR8550 Game Pack . \$29.95

AR8560 Mammals . \$29.95

AR8563 Time Compact Almanac . \$29.95

AR8596 Sherlock Holmes . \$29.95

AR8597 Shakespeare . \$29.95

AR8598 Birds of America . \$29.95

AR8580 U.S. History . \$29.95

AR8570 Timetable of History . \$29.95

AR8590 Guinness Book of World Records 1991 . \$29.95

AR8620 Britannica Family Choice . \$29.95

AR8720 Magazine Rack . \$29.95

AR8800 Bible Library . \$29.95

AR8830 Family Doctor . \$29.95

Prices subject to change. Limited availability.

Sorry, free shipping is NOT included on above items.

TIGER SOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Easily Create Magnificent 3-D Charts!

3-D CHARTS TO-GO Makes Numbers Sing in 3 Dimensions.

Why settle for two-dimensional charts when you can create explosive 3-D charts in just seconds with 3-D CHARTS TO-GO? This easy-to-use system will produce 3-D Pie, Bar, Area, Text and Line charts instantly, using your existing Excel numbers through its advanced clipboard. The innovative "split-screen" feature allows you to see both the data and the chart together for fast editing — you don't have to flip-flop between two applications when you create charts. And 3-D CHARTS TO-GO will give you three different chart views: Perspective, Isometric and Oblique.

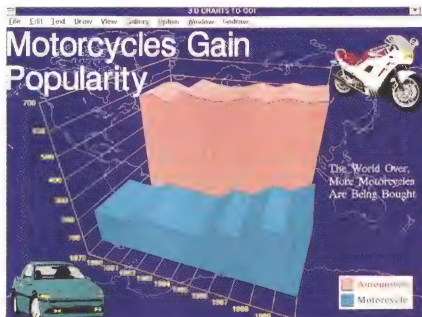
Control Size, Angle, Color, Type and Reproduction Quality.

3-D CHARTS TO-GO allows you to interactively control the size of your charts — so you see the adjustments as you make them! Sizing is as easy as clicking to get the exact size you need. Click again and adjust the viewing distance, click once more and change the rotation angle to add unique perspective to your chart. This rotation-angle control allows enormous flexibility in presenting your charts so that the data is clearly displayed. Quickly select from 17 different chart drawing patterns and 8 foreground and 8 background colors. Want to get crazy? Click to create a host of available special effects on the background and shadows to enhance the three-dimensional effect.

There's more, like the ability to select your choice of chart quality: Draft, Fine Black and White and Fine Color. And 3-D CHARTS TO-GO gives you creative freedom when adding type to your charts. Your chart's title, subtitle, descriptive lines, labels,

legend and footnotes can all be individually sized, colored and employ different fonts.

What makes 3-D CHARTS TO-GO even more impressive (and useful) is its ability to use data from Excel (and many other Windows-based applications). You'll quickly export numbers to 3-D CHARTS TO-GO without exiting Excel. You can easily merge up to 10 individual charts, print them together and perform fast, accurate data comparison. If you're a PageMaker user, you can enhance documents containing financial information and grids following the same simple steps. 3-D CHARTS TO-GO supports .WMF, .PCX and .BMP file formats.

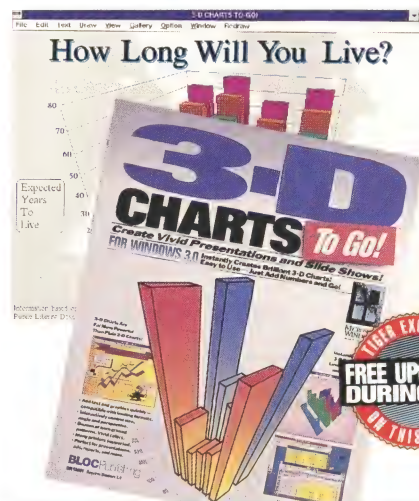
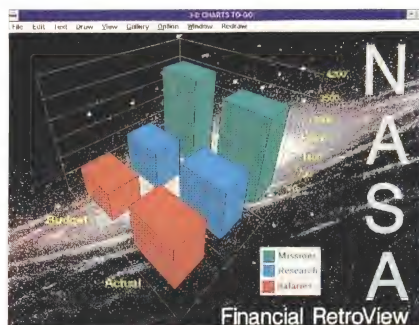


FREE! The Fast Easy Windows Tutor Program — WIND-EASE.
A \$49.95 Value.

Learn Windows in less than one hour!

3-D CHARTS TO-GO

AR1300 3-D CHARTS TO-GO 5¼" & 3½" \$99.95
Requires Windows 3.0 and 640K.



JUST RELEASED — AMI PRO 2.0!

The Number-One Rated Windows Word Processor. Easier, Faster, More Creative.

Ami Pro has created a world of possibilities for the printed page. It is a pure Windows product, not a "ported" DOS counterpart. It features the visual power and easy-to-use nature of Windows 3.0 to produce top-notch results. Indeed, it established a new standard in word processing for the graphical user interface. Now, version 2.0 breaks new ground with a rich visual environment along with an amazing array of easy-to-use tools at your fingertips. You'll write and format sophisticated documents you may have never attempted before because Ami Pro 2.0 is designed to work like you do, associating pictures and symbols—with concepts. Your ideas take shape faster and expressing them becomes easier. That's the key: Ami Pro 2.0 is extremely easy to use. So easy to use in fact, that you can create crisp, professional-looking letters, reports, proposals and presentations the very first time you use it—even if you've never used a word processor before!

An Ideal Writing Environment. Fast, Smart — and Visual.

Ami Pro 2.0 features fast outlining, easy revision marking, mathematical equations and even free-hand drawing. You'll put together charts and tables with simple point-and-shoot action. You'll see your work with true WYSIWYG display. You'll enjoy the built-in portfolio of style sheets and graphics-manipulation tools. Simply choose from pull-down menus to generate a table of contents, flow text around graphics, change fonts, colors and more. You'll select typefaces and move elements on the page easier than you ever thought possible. Ami Pro 2.0 gives you the best spell checker in the business, a thesaurus with 1.4 million selections, a full macro

language, an interactive ruler, status bar, color palette and much more. More than Word For Windows. More than WordPerfect.

Power Under the Hood!

Although Ami Pro 2.0 is a breeze to use (and use to its fullest), it possesses enormous power under its sleek interface. You'll seamlessly import and export files from WordPerfect, Microsoft Word, MultiMate, DCA, DisplayWrite, WordStar and others. Ami Pro 2.0 contains over 120 one-click SmartIcons (which match those found in Lotus 1-2-3 for Windows) that make moving through Ami Pro 2.0 fun, and you can customize and arrange them any way you like.

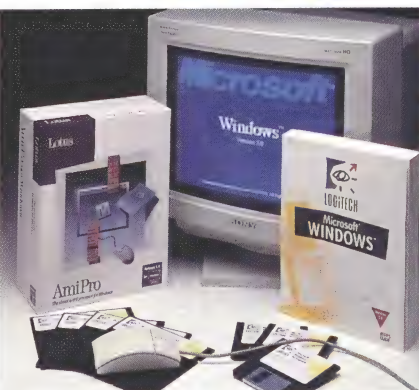
Open and edit multiple documents at one time, see them in four editable view levels — all WYSIWYG and instantly "hot-link" to other Windows applications, including Lotus 1-2-3, with 2-way Dynamic Data Exchange (DDE).

Power Fields.

You can actually create documents automatically using this innovative technological feat. Power Fields are embedded commands that, typed directly into a document, enable it to perform a task automatically. For example, a business letter can request the input of a name, look up the address from another file, automatically place the name and address on the page in a pre-defined format and include various paragraphs or passages depending on the data provided. A power field could also be used to check the state or zip code in the address and determine whether a local or toll-free phone number should be included in the body of the letter.

FREE! The Fast, Easy Windows Tutor Program — WIND-EASE.
A \$49.95 Value.

Learn Windows in less than one hour!



EXCLUSIVE TIGER PACK
AMI PRO
PLUS WINDOWS 3.0 and
THE LOGITECH MOUSE
ALL JUST \$159!

CURRENT AMI PRO USERS:
UPGRADE TO VERSION 2.0 FOR JUST \$49!

Lotus
Ami Pro

AR5090 Ami Pro Competitive Upgrade 5¼" & 3½" \$109.95
AR5095 Tiger Pack: Ami Pro Competitive Upgrade, Logitech Mouse and Microsoft Windows 3.0; 5¼" & 3½" \$159.95
Sorry, free shipping is not included on this special offer.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Circle 259 on reader service card

SEPTEMBER 1991 PC WORLD 91

...For What DOS 5.0 Still Can't Do!

- **DOS 5.0 doesn't allow simple, automatic loading of TSR's, device drivers and network software out of conventional memory. 386MAX does.**
- **DOS 5.0 won't let you use the same chunk of existing memory for either Expanded memory or Extended XMS memory for Windows. 386MAX does.**
- **In Windows, you can't simultaneously run the same DOS program or TSR safely in multiple windows. You can with 386MAX**

It's Fully Automatic!

Congratulations! You own one of the hottest computers around. But do you use it the way you should? Do you take advantage of its incredible capabilities? Are you confused by all the types of memory, not knowing what program needs what kind of memory or how to provide it? Then 386MAX is your solution. 386MAX takes charge of your computer's memory so you get right to your favorite application.

Speed Is the Key.

386MAX is the ultimate memory manager for today's 386 and 486 hi-tech computers. And best of all, hi-tech doesn't mean highly complicated. 386MAX automatically analyzes and configures your system for maximum performance and efficiency — from making utmost use of your extended memory — to providing Expanded Memory and/or XMS memory to programs that need it — to loading your pop-up utilities and network drivers above 640k. And it's 30% faster than previous versions!

Windows Users...

386MAX is the perfect partner for Windows 3.0. Your Windows applications get all the memory your

system has to offer — *plus* any programs you run out of Windows (straight from DOS) get the Expanded Memory they need! You get the best of both worlds!

If you run pop-up utilities, you can now run them reliably in Windows — thanks to a special feature of 386MAX that allows many TSRs to appear more than once in multiple windows!

Effortless Installation...

"Qualitas has made the installation of the program childishly simple, with sensational results."

Jim Seymour, PC Week

If you've tried other memory managers, you know the nightmare of installing one. Figuring out how much memory is used by hot-keyed Terminate and Stay Resident (TSR) programs when they actually run, how much memory they need to just load, where to relocate them in other parts of unused memory above 640k can make one pity the Minotaur trapped in his maze. 386MAX puts the nightmares to rest with its fully automatic installation! All you do is type INSTALL and follow the simple screens as they do all the work.

BlueMAX for the PS/2.

"For PS/2 systems... BlueMAX is the overwhelming choice because it can produce much more usable high DOS memory." *Ted Mirecki, PC Week*

The *only* memory manager designed specifically for 386 PS/2's — BlueMAX's proprietary technology recovers 80kb more memory than any other memory man-

ager. Run your IBM Blue to the MAX.

As Steve Gibson of Gibson Research Corporation (makers of SpinRite II) says: "I wouldn't and couldn't consider using a 386 system without 386MAX 5.0."

386MAX

AR3080-5 386MAX 5/4"	\$109.95
AR3080-3 386MAX 3/4"	\$109.95
AR3085 BlueMAX PS/2, 3/4"	\$139.95

System Requirements: Any 386 or 486 based computer, minimum 256K extended memory, PC/MS DOS 3.0 or later. Supports LIM 4.0 EMS, XMS 3.0, VCPI and Virtual DMA Services 1.0.

SAVE \$20.00!

QUALITAS®



Turn Your PC into a Fax Machine!

Send, Receive and Re-route Faxes — Even Remotely! Full Windows Support!

Your PC is the perfect fax machine: it connects to a modem, it has powerful printing capabilities and contains plenty of storage space. It allows you to use software that automatically transmits faxes at a certain time, or even to send faxes from a remote computer, like your client's office (fax yourself the report you forgot to bring!). Your PC's print drivers allow you to send crisp, clean facsimile documents right from your desktop or laptop PC. You

could preview the document, change fonts, add special effects, transmit at 9600 bps and more. Of course, using your PC would make it much easier to manage and archive your faxed communications. And, using your laser or dot-matrix printer, you can receive faxes ON PLAIN PAPER. All you need is the compact, affordable little board known as Fax96.

Tiger presents the price-busting fax board that has swept the industry, and captured *PC MAGAZINE's* "Editor's Choice" with its flawless reliability record. And Fax96 is fully Group 3 compatible. No other fax board can match Fax96's incredible

99.91% error-free transmission rating. In speed tests, using identical documents, Fax96 delivered a finished facsimile over fourteen seconds ahead of the nearest finisher. Fax96 is fast, because it doesn't have to scan documents before transmitting, so your faxes cost significantly less. And "scanless" document imaging eliminates dirt and transmission "noise" that translate to dots, lines and patterns on the finished fax.

Send, receive, print and manage your faxes — quickly and easily with the award-winning Fax96.



FREE! Faxography.

With DOS applications you get completely formatted graphics and 648 EPSON® printer style fonts. (Don't be fooled here. Other boards emulate 9-pin EPSON. We do 24-pin emulation for better quality images.)

Faxography with Windows® applications is stunning. All of the Adobe, Bitstream and other fonts plus graphics are supported via the Windows EPSON LQ printer driver. Windows application faxes are beautiful and impressive.

Fax96 features: Full 9600 BPS Group III compatibility. • Background Receive operation. • Automatic Transmittal Sheet generation. • Automatic Redial. • Automatic Log of sent and received messages. • Compatible with laser and dot-matrix printers. • Shares your existing phone line. • Remote control for sending faxes.

New — "1-Liner."

Don't install another phone line for your fax. Save money with advanced "1-Liner" faxboard. 1-Liner shares your existing phone line, meaning it will automatically recognize and answer another fax machine, or pass a regular voice call to your telephone answering machine.

Powerful Modem Software.

Frecom is proud to license and include Comit™ modem software from Tradewind Software®. We tested all of the software available for including and found Comit to be the tightest, fastest, easiest to use and the only one with MNP 2, 4, 5 and 7 built-in — no extra MNP hardware.



Fax96

AR6240 Fax96 board w/software	\$149.00
AR6270 Fax96 board w/modem software	\$189.00
AR6250 1-Liner board w/software	\$219.00

PC, MS-DOS 2.1 or higher, 512 KB RAM, hard disk. Shipping NOT included.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

After I Bombed with dBASE, I Almost Gave Up Automating Our Invoices...

Simpler Than dBASE and Paradox — More Powerful Than Q&A!

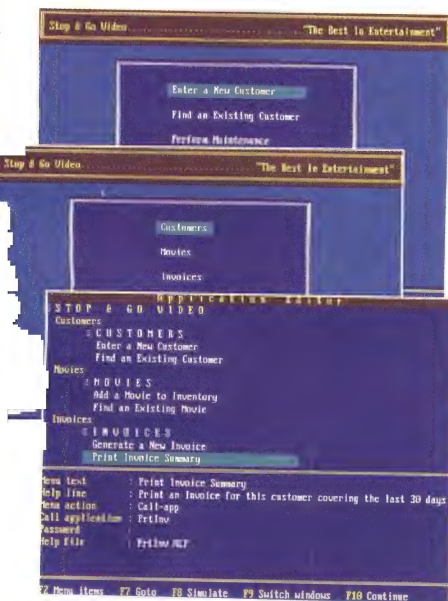
At our Monday morning staff meeting, I announced I was going to automate our invoicing system later that afternoon. Skepticism ran high. "Paul, you promised me an application like that two years ago," said Marge. "You couldn't do it and neither could that dBASE programmer you hired. It'll never happen."

On the other side of the room, Tim, a new employee whispered to Richard, "I didn't know the boss was a programmer too." "He's not," said Richard. "Couldn't write code to save his life. But he keeps trying because he thinks it's vital to the business."

I had already tried three times before to program a database: first with dBASE (much too complicated). Then I tried Q&A (not powerful enough). Then I bought Paradox (just like dBASE). All were either too complicated or not powerful enough.

This time I was confident. Why? Because I just bought Alpha FOUR, the powerful database for non-programmers like me. I spent 45 minutes over the weekend with Alpha FOUR's audio cassette tour. So I knew how easy application designs with Alpha FOUR would be, even the first time. I knew within hours, I'd be able to build a fully relational customer tracking and billing system, complete with custom menus, beautiful screens, extensive help messages and automatic error-correction for trouble-free data entry. And that's exactly what I did. You should have seen Marge's face when the first, perfectly formatted invoice came off the printer!

I Developed My Application in Minutes.



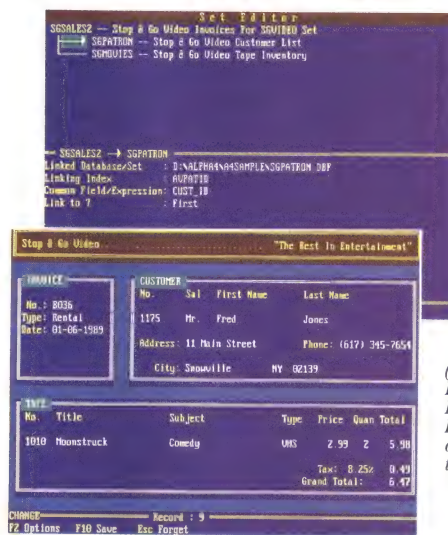
First, I needed a system of menus and sub-menus. Was I ever surprised to see how easy that was! With Alpha FOUR's "Application Editor" I wrote an outline of my menus and sub-menus. (Look at the screen.) Alpha FOUR automatically created my multi-level menus right from there. Changing my menus was just as easy. I inserted and moved a few around until I got it just right — nice and simple for my new employees.

I Made My Data Entry Bulletproof.

I've got a high employee turnover rate, so I needed something simple that a new hire could run right from the screen. I wanted my system absolutely safe and secure, so no "accidents" or mistakes could damage the data I've worked so hard to gather. That's when I really started to appreciate the well-thought-out way Alpha FOUR works. The "validation" capabilities ensure data gets entered correctly. I set it up so Social Security numbers must be 9 digits long (otherwise a custom error message is displayed).

When I enter a new customer, Alpha FOUR automatically skips over unneeded fields (determined by my validation rules). And best of all — I use "lookup" fields whenever I can. So when I get to the "Customer Type" field, a window pops up with my choices. All I do is highlight and hit ENTER. No chance of an error!

I'll Never Enter Data Twice Again.



I always ran out of power with other simple-to-use databases; they weren't relational, meaning I couldn't link up separate files that share a common field. But with Alpha FOUR I easily created different databases for customers, invoices and inventory, and linked them all together just by drawing the links between the databases on the screen. (Look at my screen.) Now, we never have to enter the same information twice. I can display and edit information from up to 10 databases on one screen all at the same time. Before, when I changed a customer's address, I had to do it in 3 different places. Never again. And my database files are so much smaller now — because the actual data is only stored in one database.

Forms and Reports Look Great!

Alpha FOUR's Report Writer was even more impressive. I "painted" reports and invoices on-screen. They looked exactly like I wanted them to — much better than our old paper forms. This "What You See Is What You Get" approach to report writing gives me the flexibility I need to create meaningful and detailed reports that really get my point across.

SPECIAL PRICING
\$549 VALUE
JUST \$99.00!

Totally dBASE Compatible.

I was delighted to hear Alpha FOUR is totally compatible with dBASE .dbf files. Our mailing list went right into the new application without even having to be converted! And when my Alpha FOUR application grows, it'll import those Lotus 1-2-3 files used over in accounting. In fact, Alpha FOUR can import and export Lotus 1-2-3, Symphony, VisiCalc, PFS, MultiMate, WordPerfect and other packages.

And Now I Get Fancy...

First I breezed through the tutorial just to get a fully operational application, but now I have the time to dress it up and make it fancy. First I'll change my menus to 3D boxes for the menu selections, and change some of the colors here and there. Alpha FOUR makes it all so easy. Then I'll customize some of the data entry screens so they look just like the paper forms the employees are used to working with. I know — I'll call up Alpha's free Bulletin Board Service and get some tips from other Alpha FOUR users.

In the future, I'll use Alpha FOUR's "Documentation" program to print out a full report of my database design, complete with all the details. That way, someone else can pick up where I left off and further expand the system.

SAVE \$450 With This Ad!
NOW JUST \$99!

If you already have any database software, integrated package* or mail list manager, or if you are currently using your spreadsheet to manage data, you can upgrade to Alpha Four for just \$99.

*Qualifying packages include programming databases (dBASE II, III and IV, Paradox, Clipper, Foxbase Pro, Revelation, etc.), flat-file databases (Q&A, PFS:Professional File, Rapid File, etc.), integrated packages (Microsoft Works, PFS:First Choice, Lotus Works, etc.), and mailing list managers (FastPak Mail, etc.) or spreadsheets with databases (Lotus 1-2-3, Quattro Pro). Retail price \$549.

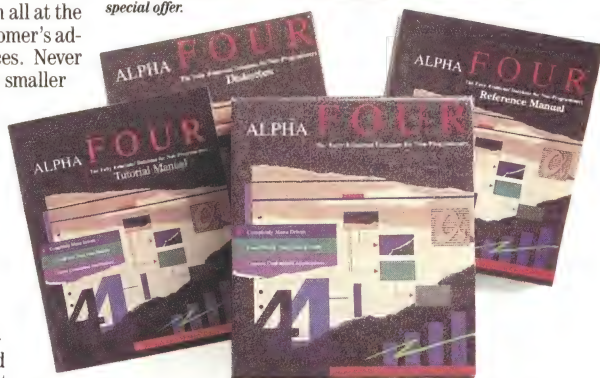


Alpha FOUR Version 1.1

AR3455-5 Alpha FOUR V1.1 5 1/4" \$99.00
AR3455-3 Alpha FOUR V1.1 3 1/2" \$99.00

Regular Tiger price \$319. Hard disk, 360kb, MS-DOS 2.0 or above, 512kb RAM. Includes over 40,000 Zip Codes with corresponding cities and states — completely cross-referenced for easy fill-in.

Risk-free, 60-day money-back guarantee. Limit one per customer. Offer good through October 31, 1991. Sorry shipping is not included on this special offer.



TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Circle 259 on reader service card

SEPTEMBER 1991 PC WORLD 93

Simply the Best Disk Optimizer!

The Ultimate Disk Packer and De-Fragmenter For ANY Size Disk!

There's nothing more aggravating than a sluggish hard disk. It doesn't go away — it gets worse every time you use your computer! The culprit: DOS. It stores files in little pieces all over your hard disk, instead of in one piece. This "fragmentation" can significantly impair your system's performance, and shorten the life of the disk itself. There is an easy, safe and affordable solution — FastTrax.

FastTrax 4.0 is the industry-acclaimed disk optimizer that keeps your hard disk running like new. It works in 3 ways to keep your hard disk clean, organized and fragment-free.

- 1. Solves Fragmentation.** FastTrax defragments and consolidates scattered files and directories on any hard disk or floppy. And it will work beautifully with disks with DOS partitions larger than 512K. There are no limits to the number of files, directories, directory levels or clusters. The unique "Optimize Fragmented Files Only" feature lets you tune-up your disk in seconds and supplies visual reports on fragmented disk areas and other vital file statistics before you optimize.
- 2. Efficient File Placement.** DOS is lazy. It doesn't care where it places the pieces of your files that it so carelessly fragments. FastTrax takes care of that by placing your files within disk cylinder boundaries. This adds more speed to your disk than you've ever seen (even when it was new) by reducing track-to-track seeks when accessing these files.
- 3. Reduces Hard Disk Head Movement.** FastTrax and its companion product, MakeTrax (included FREE), give you the flexibility to place frequently used files close to your File Allocation

Table (FAT), reducing the amount of movement of your hard disk's read/write head. By placing files in strategic positions, you'll increase speed and use disk space efficiently. And FastTrax actually prevents data loss in the event an optimization is disrupted in progress.



"Being able to customize optimizations to fit your applications is what makes the difference... FastTrax wins hands down. It's the most fully featured optimizer around."

—PC World



"With more power and more options than the competition, and with all available safety precautions, FastTrax is the closest thing you can find to the ultimate disk packer and defragmenter."

—PC Magazine



"But after trying them all, we've found FastTrax to be fast, rock-solid, easy to use, and highly configurable — your disk gets organized the way you want it in minutes."

—Byte Magazine

Minimum RAM requirements:

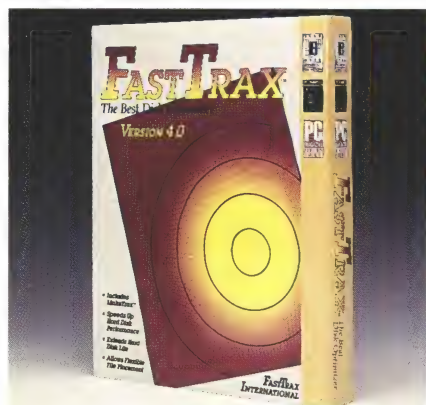
- 256 KB for floppy disk systems
- 512 KB for most hard disk systems

Maximum RAM requirements:

- 800 KB expanded memory (LIM version 3.2 or higher) may be needed to optimize hard disk partitions larger than 85 MB.
- Supports any drive: ESDI, SCSI, IDE removable hard drives and drives with more than 1024 cylinders.

FastTrax Features:

- Optimize any disk supported by DOS, including those with DOS partitions larger than 512 MB.
- Fast and safe optimizing.
- Extra-fast "optimize fragmented files only" option lets you "tune-up" your disk in seconds.
- Visual reporting shows fragmented disk areas and other file statistics before you optimize.
- No limitations on the number of files, directories, directory levels, or disk clusters.
- Batch file operation.
- Works on hard disks or floppies.
- Helps prolong the life of your hard disk.
- Compatible with existing copy protection schemes; FastTrax itself is not copy protected.



FastTrax

AR3840-5 FastTrax5 1/4" ... SAVE \$10.00 ... \$59.95
AR3840-3 FastTrax3 1/2" ... SAVE \$10.00 ... \$59.95
IBM PC, XT, AT, PS/2 or compatibles.

Stunning Fonts For Your Printed Page.

Scalable Fonts from within WordPerfect, LetterPerfect, Microsoft Word and Works.

Don't just print plain text — fashion creative works of art that bond themselves to the reader. Impress upon the printed page aesthetic, stunning communications that magnetically draw readers to them. This is what professional "Desktop Publishing" is all about. This is what Publisher's Powerpak can do for your word processor.

If you use WordPerfect, LetterPerfect, Microsoft Word, or Works — you absolutely must have Freedom of Font Choice. Whether you print on a dot-matrix, inkjet or laser printer, Powerpak delivers the finest-quality fonts your money can buy.

Why Scalable?

There are two different types of font software: scalable fonts and bit-mapped fonts. Powerpak uses the newer, advanced scalable-font technology. A

scalable font is basically mathematical formulas that describe the shape of the font, with no reference to the size. When you need that font, you pick a size, and the needed letters are created instantly from the mathematical formulas. The letters are created "on the fly" — as you need them. Scalable fonts use virtually no hard disk space — only 50K for an entire typeface family, which in-

cludes every size you'll ever want.

Bit-mapped fonts on the other hand, gobble megabytes of hard disk space right from the start. Bit-mapped means each "bit", or visible dot that makes up a letter, is "mapped" to a specific location. You need a separate file for each bit-mapped font — that means one file for each font size!

I used to use bit-mapped fonts (before the new scalable fonts came out). I had only 7 different typefaces. Each typeface had five sizes: 12, 14, 18, 24 and 36 point. My limited selection of fonts took up 10 megabytes of hard disk space!

Now I use Powerpak. I have over 114 different typefaces to choose from. In any size I want, from 6 to 1,000 points (Word and Works limits point size to 127). With this seemingly unlimited selection of font choices, I actually use 25% less disk space than before. If I wanted this selection with my bit-mapped fonts, I'd have to buy a 200Mb hard disk!

Quality Fonts

Not all fonts are created equal. There are cheapies out there that print jagged letters and have strange character-spacing. That's why you want to stay with the choice of the pros. PC World recently declared Publisher's Powerpak the "Best Buy" of font software, and gave Powerpak's printer and screen fonts the highest quality rating — Excellent.

- Picking point sizes has never been easier, 6 point to 1000 point
- Easy to install; no new commands to learn



Add-on Font Packs

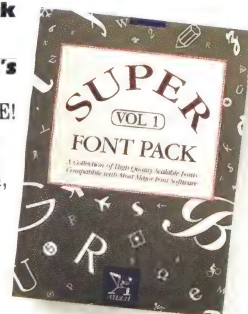
Powerpak includes 30 typefaces for an outstanding font value.

Powerpak Fonts		
Eureka	Palomar	Oakland
Linden	Santee	Alpine
Memo	Hemet	Marina
Mettler	Stockton	Aurora
Merced	Maxirr	Indio
Quincy	Springer	Hancock
Calico	Freedom	Silicon

But that's just the beginning. There's an entire library of over 800 typefaces available for you to choose from. Nine foreign languages from Greek to Hebrew to Korean. Atech Font Packs: 117 different volumes — each filled with beautiful assortments of typefaces — and only \$29.95 per package.

Super Font Pack FREE with Publisher's Powerpak!

\$150.00 value — FREE! Eighty-four typefaces, each in normal, bold, italic, bold italic, thin, condensed, wide, expanded, and hollow.



Powerpak

AR4095-5 Powerpak w/FREE Font Pack 5 1/4" ... \$59.95
AR4095-3 Powerpak w/FREE Font Pack 3 1/2" ... \$59.95
Requires hard disk.



TIGERSOFTWARE

TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Quickly Create Authoritative Employee Handbooks.

Protect Your Employees —
And Your Company!

Human resource and labor law experts agree that one of the most important documents your company will publish is the employee handbook.

A professionally-written policy handbook clearly defines an understanding on areas such as non-discrimination, employment termination, pay periods, smoking, medical leaves of absence, overtime, performance, and behavior.

How the System Works.

Personnel Policy Expert begins by focusing on the significant issues of over 60 policy topics. It asks key questions about your specific situation and actually writes an employee handbook tailored to your needs. The built-in word processor gives you complete control over each policy's final wording.

Easy to Learn and Use.

Although you'll want to give your employee handbook careful thought, actually putting together the handbook is just a matter of following the menus on the screen. You'll be well on your way just minutes after opening the box!

Authoritative, Up-to-Date Info.

Includes human resources and labor law information on over 60 important policy subjects. The system offers explanations of each topic, pros and cons, legal requirements and standard business practices. These discussions provide insight on the possible ramifications of policy decisions.

The program goes beyond inflexible model policy manuals that require you to do all the work. This expert system program educates you on the critical personnel and legal issues and, based on your informed policy decisions, writes the policies for you.

*Awarded 1989 Excellence in
Software by the Software
Publishers Association.*

- Access to personnel files
- Administrative pay corrections
- AIDS in the workplace
- Attendance & punctuality
- Bereavement leave
- Child care benefits
- Conflicts of interest
- Dress code
- Drug & alcohol use
- Drug testing
- Educational leave
- Emergency closings
- Employee acknowledgement form
- Employee benefits
- Conduct & work rules
- Welcome message
- Reference checks
- Employee relations
- Employment applications
- Employment categories
- Employment termination
- Equal employment opportunity
- Family leave
- Hiring of relatives
- Holidays
- Immigration law
- Introductory statement
- Jury Duty
- Maternity absences
- Medical leave
- Military leave
- Nature of employment
- Non-disclosure
- Organization description
- Outside employment
- Overtime
- Pay advances
- Pay deductions/setoffs
- Paydays
- Evaluations
- Personal leave
- Personal data changes
- Pre-employ. physicals
- Probationary period
- Relocation benefits
- Resignation
- Rest & meal periods
- Return of property
- Safety
- Security inspections
- Severance pay
- Sexual harassment
- Sick leave
- Smoking
- Solicitation
- Time off to vote
- Timekeeping
- Title page
- Use of phone & mail systems
- Use of equipment & vehicles
- Vacation benefits
- Witness duty
- Work schedules
- Workers' compensation

For Use in All 50 States.

Personnel Policy Expert is designed to write policies for employers throughout the U.S. It will significantly reduce the time you must spend with your legal counsel ensuring that the policies are in compliance with all federal, state and local laws.

FREE PERSONAL LAW FIRM
(a \$99.00 retail value)

When you buy Personnel Policy Expert!
Create wills, leases and other legal documents.



KNOWLEDGEPOINT

Personnel Policy Expert

AR3900-5 Personnel Policy 5 1/4" \$495.95
AR3900-3 Personnel Policy 3 1/2" \$495.95
IBM PC, XT, AT, PS/2 and compatibles, 512K RAM.

Dear Tiger Reader:

I remember the first time I met the group from TigerSoftware. Their goal was to create an alternative software source. A source that would provide more in-depth information about the software they sold, and place a high priority on skilled customer service.

Today, TigerSoftware fills the enormous gap left by "The Incredible Shrinking Channel." TigerSoftware has become a direct channel spitfire, far and away the premier software mail-order vehicle of its kind.

In fact, TigerSoftware is a software channel unto itself.

That's why I strongly suggest you take a good look at this important industry marketing.

How to Place an Order.

► **Ordering:** Just call 1-800-88-TIGER from 7AM to 7PM (eastern standard time) and one of our representatives will be happy to take your order. Or, simply complete the order form and return it to us — your order will be promptly processed.

► **Fax Orders:** For faster service, FAX your order form or P.O. to us on our TigerSoftware ExpressFAX Order Line — (305) 444-5010.

► **How to Pay:** Pay for your purchases with VISA, MasterCard, American Express, by check (personal checks held 10 days) or money order. We DO NOT charge your account UNTIL WE SHIP THE SOFTWARE! We accept purchase orders from Fortune 500 companies, educa-

tional, and government institutions. (Net 15 days.)

► **Risk-Free Return Guarantee:** We proudly stand behind every product we sell with our iron-clad, 30-day return guarantee. If for any reason, you're not 100% delighted with the product, just return it within 30 days. We only ask that you return ALL material in new, resalable condition (packing materials, registration cards, etc.) and the original invoice. We will then immediately exchange the program or issue a TigerSoftware credit, less shipping costs, for any future TigerSoftware purchase.

► **Customer Service:** If you order your new software product by 3:00 p.m. e.s.t., then Federal Express picks it up the same day for immediate shipment to you. If for any reason you are unhappy with your new software, simply call our Customer Service Department for a Return Authorization Number, and return it to us freight prepaid. We will gladly exchange it for any other product in our huge inventory. If you are still not completely satisfied with our products or our service, we will gladly refund your total purchase price paid, less any freight charges incurred.

All Prices Subject to Change.

TigerSoftware is a registered trademark of TigerSoftware, Inc. This entire catalog, copy and unique method of showcasing products is copyright 1989, 1990, 1991 TigerSoftware, Inc. All trademarks appearing herein are acknowledged.

Practice Safe Computing.

Tough Padlocked Protection

Equipment theft? Virus infection? Data security? If you worry about any of these, you need the Secure-It solution. Not just another software program for some demented hacker to break through — this is a tried-and-true method for serious security.

Stop and think what you lose



when your equipment is stolen or your data is corrupted. Time to reload. Hardware downtime. Wasted employee hours. Inevitable confusion. Secure-It is the proven method used by government agencies, businesses, colleges and universities.

Disk Drive Lock

Very simple — very safe. Put a lock on the opening of your disk drive and pocket the key. Patented Disk

Drive Locks keep viruses out and your valuable information in. The Model 250 fits most 3 1/2" and 5 1/4" drives, and the Models 260 and 261 fit Macintosh computers. Quick and easy installation/removal make these a must for worry-free computing.

Cable Safety

Attach this strong, high-quality 10-foot cable to your equipment and then to the desk or any immovable object.



Special fasteners prevent existing screws from being removed.

Secure-It, Inc.

Secure-It

AR6010 Drive Lock 250 (PC) \$24.95
AR6015 Lock 260 (Mac SE, Plus) . \$24.95
AR6020 Lock 261
(Mac II's, Classic) \$24.95
AR6040 Cable KAB 100 (PC) \$49.95
AR6030 Cable MCK 130 (Mac) ... \$49.95
\$5.95 Shipping

TIGERSOFTWARE

TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Circle 259 on reader service card

SEPTEMBER 1991 PC WORLD 95

We Now Can Offer You Over 11,000 Products And Upgrades. Call Us!

TIGER WAREHOUSE YELLOW SHEET

The Latest Software! The Hottest Hardware! If it's not here, call us — we'll find it!

Sorry, but because these prices are so low, shipping is not included.

ALDUS

AR Y1385	☐ Persuasion 2.0 for Windows	\$345
AR Y1394	☐ PageMaker 4.0 for Windows	\$537

ALPHA SOFTWARE

AR Y1415	☐ Alpha Four 1.1 Competitive Upgrade	\$99
----------	--------------------------------------	------

ASHTON-TATE

AR Y1434	☐ dBASE IV 1.1 Compet. Upg.	\$149
----------	-----------------------------	-------

ASYMETRIX

AR Y1454	☐ Toolbook 1.5 for Windows	\$310
----------	----------------------------	-------

BERKELEY SYSTEMS

AR Y1485	☐ After Dark 1.0 for Windows	\$29
----------	------------------------------	------

BOCA BOARDS

AR Y6520-1	IO/XT or AT w/1 Ser./1 Par.	\$65
AR Y6520-3	IO/XT or AT w/2 Ser./1 Par.	\$70
AR Y6520-2	IO/AT w/2 Ser./2 Par.	\$75
AR Y6500-5	AT Plus SIMM w/0MB	\$120
AR Y6500-1	AT Plus DIP w/0MB	\$130
AR Y6500	AT Plus DIP or SIMM w/2MB	\$280
AR Y6500	AT Plus DIP or SIMM w/4MB	\$399
AR Y6500	AT Plus DIP or SIMM w/8MB	\$699
AR Y6515-1	Basic VGA 640×480	\$70
AR Y6515-2	Basic VGA 800×600	\$75
AR Y6510-1	Super VGA w/512 Kb	\$135
AR Y6510-2	Super VGA w/1 MB	\$165

BORLAND INTERNATIONAL

AR Y1514	☐ Quattro Pro 3.0 Compet. Upgr.	\$99
AR Y1515	☐ Borl. C+ + 2.0 Win.	\$339
AR Y1524	☐ Paradox 3.5 Com. Upg.	\$175
AR Y1525	☐ Object Vis. 1.0 Win.	\$97

BRODERBUND

AR Y1575	☐ Banner Mania 1.0	\$21
AR Y1584	☐ New Print Shop 3.0	\$36
AR Y4665	☐ Where in America's Past Is Carmen Sandiego?	\$39
AR Y1644	☐ SimCity	\$35
AR Y1595	☐ SimEarth	\$49

CAERE

AR Y1655	☐ Omnipage 386 3.0 Win.	\$492
AR Y1665	☐ Omnipage Prof. 1.0 Win.	\$704
AR Y5065	☐ Typist	\$399
AR Y5075	☐ Typist for PS/2 AT	\$399

CENTRAL POINT

AR Y1674	☐ PC Tools 7.0	\$115
AR Y1674	☐ AntiVirus 1.0	\$89
AR Y1674	☐ Commute 1.0	\$89

CONTACT SOFTWARE

AR Y1745	☐ ACT! 2.0	\$243
----------	------------	-------

COREL SYSTEMS

AR Y1784	☐ CorelDRAW! 2.0 Win.	\$399
----------	-----------------------	-------

CURTIS

AR Y5105	☐ Keyb. Space Saver II KS-2	\$39
AR Y5115	☐ Ruby-Plus SPF 2+	\$69

DATA DESK

AR Y5085	☐ Switchboard	\$159
----------	---------------	-------

DATA STORM

AR Y1984	☐ PROCOMM Plus 2.0	\$70
----------	--------------------	------

DCA

AR Y2024	☐ Crosstalk for Windows 1.1	\$127
----------	-----------------------------	-------

DISNEY SOFTWARE

AR Y2045	☐ Mickey's ABC's Combo Pak	\$69.95
AR Y4110	☐ Dick Tracy Print Kit	\$19.95
AR Y4115	☐ Duck Tales Quest for Gold	\$44.95
AR Y4120	☐ Mickey & Minnie's Print Kit	\$19.95
AR Y4125	☐ Mickey's Runaway Zoo	\$14.95
AR Y4130	☐ Donald's Alphabet Chase	\$14.95
AR Y4135	☐ Goofy's Railway Express	\$14.95
AR Y4140	☐ Mickey's Colors & Shapes	\$49.95
AR Y4145	☐ Arachnophobia	\$49.95
AR Y4150	☐ Arachnophobia Combo Pak	\$69.95
AR Y4155	☐ Mickey's 123's	\$49.95
AR Y4160	☐ Mickey's ABC's	\$49.95

AR Y4165	☐ Sound Source	\$34.95
AR Y4099	☐ Mickey's Crossword Maker	\$29.95

DMA

AR Y2074	☐ PC Anywhere IV 4.03 III	\$109
----------	---------------------------	-------

FARALLON COMPUTING

AR Y5095	☐ PhoneNET Talk	\$139
----------	-----------------	-------

FIFTH GENERATION

AR Y1225	☐ Pyro! 1.0	\$39
AR Y1284	☐ DiskLock 1.0	\$124
AR Y2154	☐ FastBack Plus 3.0	\$124

FOX SOFTWARE

AR Y2124	☐ FoxPro 2.0	\$499
----------	--------------	-------

FUNK SOFTWARE

AR Y4105	☐ P.D. Queue 1.0 (print spooler)	\$59
AR Y4115	☐ Sideways 3.3	\$59
AR Y4125	☐ Sideways 3.3/P.D. Queue 1.0	\$85
AR Y4135	☐ Allways 1.2 for Lotus 1-2-3	\$127

GREAT AMERICAN SOFTWARE

AR Y4155	☐ Money Matters 2.0	\$45
AR Y4165	☐ One-Write Plus Payroll 2.06	\$66
AR Y4175	☐ One-Write Plus Acct. Sys.	\$195

hDC COMPUTER CORP

AR Y4205	☐ Icon Designer 1.0 Windows	\$35
AR Y4215	☐ Windows Express 3.0	\$59
AR Y4225	☐ First Apps 1.0 Windows	\$59

INNER MEDIA

AR Y2295	☐ Wide Angle 1.0 for Windows	\$69
----------	------------------------------	------

INTUIT

AR Y2394	☐ Quicken 4.0	\$39
----------	---------------	------

KENSINGTON MICROWARE

AR Y2474	☐ Master Piece Plus/UNIV.	\$110
AR Y2485	☐ Expert Mouse (serial)	\$129
AR Y2484	☐ Expert Mouse (bus)	\$129

LOGITECH

AR Y2554	☐ Trackman Serial	\$85
AR Y2564	☐ Trackman Bus	\$91
AR Y2584	☐ ScanMan 32 GrayScale	\$172
AR Y2594	☐ ScanMan 256	\$329
AR Y2595	☐ Mouseman (cordless)	\$143

LOTUS

AR Y2645	☐ 1-2-3 3.1 Live Upgrade	\$150
AR Y2655	☐ 1-2-3 2.3 Live Upgrade	\$150
We Now Sell All Lotus Upgrades		
AR Y2665	☐ Ami Professional 1.2 Competitive Upgrade	\$129
AR Y2675	☐ Freelance Graphics 3.01 Upgrade	\$100

MICROGRAFX

AR Y4335	☐ Charisma 2.0 Windows	\$358
AR Y4345	☐ Designer 3.1 Windows	\$502

MICROLYTICS

AR Y2775	☐ Strunk & White's Elements of Style	\$41
AR Y2785	☐ Random House Ency. 1.0	\$70
AR Y2795	☐ Inside Info Mac	\$70

MICROSOFT

AR Y2884	☐ Quick Basic 4.5	\$69
AR Y2814	☐ Windows 3.0	\$99
AR Y2824	☐ Project for Windows	\$472
AR Y2804	☐ Productivity Pack for Windows	\$45
AR Y2854	☐ Word 5.5	\$227
AR Y2834	☐ PowerPoint for Windows	\$336
AR Y2835	☐ Word 1.1 for Windows	\$329
AR Y2874	☐ Excel 3.0 for Windows	\$329
AR Y2904	☐ C Compiler 6.0	\$329
AR Y2905	☐ MS-DOS 5.0 Upgrade	\$69
AR Y2915	☐ Visual Basic	\$139
AR Y2934	☐ Entertain. Pack for Windows	\$31
AR Y2914	☐ Flight Simulator 4.0	\$41
AR Y2935	☐ Aircraft & Scenery Designer 1.0	\$29

OKNA

AR Y4425	☐ Desktop Set 3.0 for Win.	\$88
----------	----------------------------	------

PASSPORT DESIGN

AR Y4735	☐ TRAX for Windows 2.1	\$69
AR Y4745	☐ Encore	\$391
AR Y4755	☐ Master Tracks Pro for Windows	\$258

PERSONICS

AR Y4435	☐ Laptop Ultravis. (3.5 only)	\$49
----------	-------------------------------	------

AR Y4455	☐ Ultravis. for EGA/VGA	\$79
AR Y4465	☐ Monarch 1.0	\$325

PRECISION SOFTWARE

AR Y4475	☐ Superbase 4 for Windows 1.2	\$455
----------	-------------------------------	-------

QUALITAS

AR Y4485	☐ 386MAX 5.1	\$79
AR Y4495	☐ BlueMAX 5.1 for PS/2 (3.5 only)	\$89

QUE SOFTWARE

AR Y4505	☐ RightWriter 4.0	\$59
----------	-------------------	------

SOFTLOGIC SOLUTIONS

AR Y4525	☐ Software Carousel 5.0	\$59
----------	-------------------------	------

SOFTWARE PUBLISHING

AR Y3285	☐ Professional Write Plus 1.0 Win.	\$176
AR Y3254	☐ Harvard Graphics 3.0	\$399
AR Y3295	☐ Harv. GeoGraphics 1.0	\$289

SOFTWARE TOOLWORKS

AR Y4535	☐ Word for Word (Win. vers.)	\$45
AR Y4775	☐ Chessmaster 2100 (CP)	\$35
AR Y4785	☐ World Atlas	\$42

SPINNAKER

AR Y4545	☐ PFS: Window Works 1.0 Win.	\$136
AR Y4555	☐ PLUS for Windows	\$293

SYMANTEC

AR Y3354	☐ The Norton Backup 1.2	\$109
AR Y3344	☐ The Norton Utilities 6.0	\$120
AR Y3315	☐ Q&A 3.0 - International	\$239
AR Y3355	☐ Norton Anti-Virus 1.0	\$89
AR Y3365	☐ JustWrite 1.0 Windows	\$80
AR Y3375	☐ On Target 1.0 Windows	\$282

THE COMPLETE PC

AR Y2464	☐ The Comp. Answering Machine	\$264
AR Y3444	☐ The Comp. Communicator	\$463
AR Y3474	☐ The Comp. Flatbed Scanner GS	\$999
AR Y3424	☐ The Comp. Half Pg. Scanner/ GS (gray scale)	\$199
AR Y3475	☐ The Comp. Pg. Scanner w/Calera's WordScan	\$595

TIMESLIPS

AR Y4605	☐ Timeslips III 4.0	\$199
AR Y4615	☐ PercentEdge	\$69
AR Y4625	☐ TimeSheet Professional	\$145

TIMWORKS

AR Y3494	☐ Publish-It! 2.0	\$149
----------	-------------------	-------

TRAVELING SOFTWARE

AR Y3524	☐ LapLink III	\$99
----------	---------------	------

VENTURA SOFTWARE

AR Y4635	☐ Ventura Publ. for Windows 3.0	\$573
----------	---------------------------------	-------

WEST LAKE DATA CORP.

AR Y4645	☐ PC-FullBak +	\$52
----------	----------------	------

WORDPERFECT CORPORATION

AR Y3595	☐ WordPerfect Office 3.01	\$96
AR Y3594	☐ LetterPerfect 1.0	\$144
AR Y3574	☐ WordPerfect 5.1	\$279
AR Y3584	☐ DrawPerfect 1.1	\$289

XTREE

AR Y3625	☐ XTree Easy 1.0	\$45
AR Y3634	☐ XTree Gold 2.0	\$98

TIGER YELLOW SHEET POLICY

- Your credit card is not charged until we ship.
- No sales tax, except FL residents (add 6% tax).
- International orders U.S. \$250 minimum.
- We charge actual shipping costs for domestic and international orders.

KEY

- ☐ Dual Media Package. Includes both 5 1/4" and 3 1/2" disks.
- ☐ Specify Media. Please specify 5 1/4" or 3 1/2" disk.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

All versions of these products are absolutely the latest available as of press time.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Razor-Sharp 262,144 Color Hand Scanner!

Unmatched Resolution and Color that Fits in the Palm of Your Hand!

Imagine an instrument that you can quickly pass over a graphic image, logo, design, drawing, chart, photograph — and instantly capture it to your computer screen. Brilliant colors and unmatched resolution can be yours with the Marstek family of scanners.

The new M-6000CG Super Color scanner absorbs an astonishing 262,144 different colors from any printed page or photo! Scan in your photo albums, your wedding picture, or your graduation photo and display it onscreen with lifelike realism. Produce high-impact documents and presentations with the power of graphic images. The possibilities are limitless. The M-6000CG also scans in true 64 gray scales with 400 dpi. In color mode, the M-6000CG scans in 200 dpi. (200 dpi is just right for photos and artwork. Picture this: If you have a standard VGA monitor and scan in a 3" wide photo — it fills your entire screen with a perfectly duplicated image.)

For precise scanning of anything small, you need the M800 — delivering an incredible, unmatched 800 dots per inch. 800 dpi means crisper, cleaner, more highly detailed images for use in desktop published documents, reports, proposals, newsletters, flyers, and brochures. Scan in a postage stamp and it fills the screen with stunning detail.

And with a host of special effects and patterns built right in, controlling the look of the image is simple — and fun! The images you scan will reproduce as if they were originals, and they can be stored in TIF, PIX, PCX, CUT, IMG and MSP formats.

Or imagine simply scanning text from printed pages, magazines and books — no more re-keying! The Marstek hand scanners deliver unmatched reso-



lution for precise character recognition regardless of the type style or size and even include free optical character recognition (OCR) software to turn the scanned text into ASCII — ready to use in word processing or desktop publishing applications.

And the whole system is ready to run right out of the box. The installation is fast and easy, the technology is simply amazing.

The Marstek Family Of Mice.

The Marstek Mice are designed for higher performance. They're 100% Microsoft compatible and impeccably accurate — but they come with a surprisingly modest price tag. We tested the Marstek Mice (E22 and P93 models) for accuracy and speed against other leading nameplates, and it equalled or outperformed the Microsoft Mouse, Logitech's

Series 9, and several others. The secret is in the outer shell design and durable construction. You'll notice a silkier movement and an increased feeling of control the very first time you use it. The Marstek E22 and P93 also feature buttons with firm, clean clicks. A far cry from the "mushy" buttons you find on other mice, great for fast, rapid-fire computing.

BONUS!

Free When You Buy A Marstek Hand Scanner.

Marstek CAT Reader or Perceive Personal/DOS OCR Software — These packages allow fast, easy optical character reading (OCR) for text pages. Imagine having the ability to simply SCAN text — instead of re-keying it! You'll improve efficiency for a variety of office tasks.

PC Paintbrush Plus or Rainbow Paint — the industry's most respected and capable paint programs — put the most extensive electronic palette at your fingertips — colors, image blending and more.

Marstek

Marstek Scanner/Mice

AR6150 M-6000CG w/Rainbow Paint and Perceive Personal/DOS OCR	\$649.00
AR6130 M-800P w/CAT Reader OCR and PC Paintbrush Plus	\$279.00
AR6120 M-800W w/CAT Reader OCR and PC Paintbrush Plus and E22 Mouse	\$299.00
AR6140 Marstek Mouse E22	\$49.00
AR6160 Marstek Mouse P93 w/PC Paintbrush Plus	\$99.00
AR6170 Mac 800 Scanner (for Macintosh) w/FREE Enhance Software	\$399.00

Fax "On The Road"

Fax from Any Laptop or Notebook — Without a Fax Machine!

Now you can send a fax to any location in the world — hassle free. All you need is your laptop or notebook computer and *On The GoFAX*. Avoid endless searching for a printer and fax machine. You don't even need a fax board. Save precious battery life using your modem to send lightning-fast faxes.

GoFAX is a complete system that will create, dial, and send your fax from a hotel room, pay phone, even over cellular! Using an AT&T service bureau, you dial toll-free and send fast (while saving battery life). Your fax is relayed and a low per page fee is charged to your credit card. Only \$3 for the first page and \$2 for additional pages. Includes a free cover slip. No monthly fee. It's simple, fast, and inexpensive.

Send files from your favorite software — text or graphics — or use the included editor for faxes up to 3 pages long.

GoFAX-Tiger Exclusive

The first four pages are free! Get a \$10 credit with Tiger-Software with every GoFAX purchased.



On The GoFAX

AR3800-3 GoFAX 3 1/2" \$69.95
1200 or 2400 baud modem, DOS 3.0, 512K.

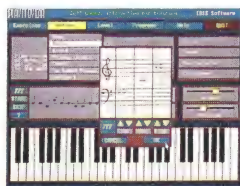
Musicians — Get With The Program!

Amateurs to Pros — Training and Practice Are the Keys to Mastering Music.

Master the subtle sounds of music with these two PC maestros. Whether you're an amateur or full-time professional, you can turn your computer into a realistic learning and practice environment. Use the speaker inside your PC, Ad Lib's Music Card, Sound Blaster, or even play through your MIDI instrument. You'll sharpen your musical senses, and marvel at the fun you'll have doing it.

Play It By Ear

Hear it — then play it. Without knowing how to read music! That's what Play It By Ear can do for you. Train your ears to pick out notes, tones, chords and more. It shows you how to play everything back. By ear, without sight reading. Play an on-screen guitar fretboard or keyboard. Or play straight from your MIDI keyboard. Play It By Ear automatically tracks your progress as you master the sounds of music.



Rhythm Ace

What's the secret of a great drummer, or any great musician? They keep perfect rhythm and never miss a beat. You too can become a rhythm ace as you learn, practice and play rhythms. Perfect your grasp of tempo, time signatures, meters and more. Keep the beat with a computer keyboard, mouse, or MIDI instrument. Select single or two-handed rhythms.



Choose classical or jazz style. Tap your feet. Have some fun!

So for inexpensive ways to have fun or get serious about music — get with these two great programs!



ad lib
SOFTWARE

SAVE \$30 When You Buy Both Play It & Rhythm Ace!

Play It By Ear & Rhythm Ace

AR3810 Play It By Ear Dual \$99.95
AR3820 Rhythm Ace Dual \$99.95
640K, DOS 2.0. Supports: MIDI card (MPU-401 compatible), Sound Blaster, and Ad Lib sound card.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

The Best-Selling Forms Software in the World!

Just Sit Down and Create a Great Form...

It's easy to see why FormTool is the best-selling forms package in the world. It's the fastest, easiest way to create, edit, manage and print custom, professional forms for immediate information gathering.

home in well over half of the Fortune 500 list, along with thousands of educational institutions, government agencies, hospitals and financial organizations around the world. They've discovered FormTool's productive power.

Unlike its competitors, FormTool doesn't require additional memory, a graphics card, color display, mouse or scanner. It runs beautifully on anything from an XT to a 486. FormTool now supports hundreds of dot-matrix, letter-quality, daisywheel, thermal as well as Hewlett-Packard printers, and a new support for PostScript lasers.

Draw Forms Fast.

FormTool streamlines the PC's ability to draw forms. Lines of any weight, boxes of any size, grids of any complexity and more can be quickly drawn with just a few keystrokes. If a grid isn't quite right, one keystroke re-draws it to meet your exact specifications, then displays it on the screen with our WYSIWYG display. Zoom in to see a close-up of your form, then zoom out for the full page view. If you spot a problem, quickly make the revision, preview it again — then print it.

This preview capability combines the advantages of a graphics-based, on-screen display with text-based, lightning-fast processing times and makes FormTool even easier to use — and enhances creativity and accuracy in the design process.

Instant Revisions.

FormTool's ability to make instant revisions to your forms gives you the flexibility to create exactly the proper form to meet the requirements of your work flow. Ideal for users of any experience level.

Enter Text in Seconds.

To handle text, FormTool contains a forms-

oriented word processor that allows you to move quickly through the form inserting captions, instructions, word-wrapped text and special symbols, and characters. FormTool will enter your text into position automatically.

An All New Forms Manager.

And FormTool Gold contains an all new Forms Manager that makes organizing, retrieving and archiving forms faster and more efficient.

Includes a built-in backup and restore, the ability to instantly view forms from a list on your screen and a new set of features that allow you to "move," "copy," or "delete" forms from the Forms Manager.

FormTool's Forms Manager also includes hard disk directory support, allowing you to store forms anywhere — or you can assemble form sets in just seconds using the sleek new menu system.



BONUS!

FREE QUICK TEMPLATE When you buy FormTool Gold!

Quick Template is the perfect replacement for your lost plastic templates. Pop up a list of every special key from within FormTool Gold. A \$49.95 value!



FormTool Gold

AR1020 FormTool 3.0 5 1/4" & 3 1/2" \$69.95
IBM PC, XT, AT, PS/2 or compatibles with 265K. Floppy or hard disk, supports all color or monochrome monitors with or without graphics cards and virtually all dot-matrix printers, daisywheel and laser printer.

Improve Your Writing in 30 Minutes.

Improve Your Writing by Checking Grammar, Style, Punctuation, and More.

In business, you're judged by what you say — and by how you write. Nothing can kill the confidence of a prospective customer or client faster than a proposal littered with grammatical, usage and punctuation errors.

The fact is, there's no excuse for sloppy, error-filled written communication. Each letter, report, proposal, press release or other business document you prepare should represent you as a professional.

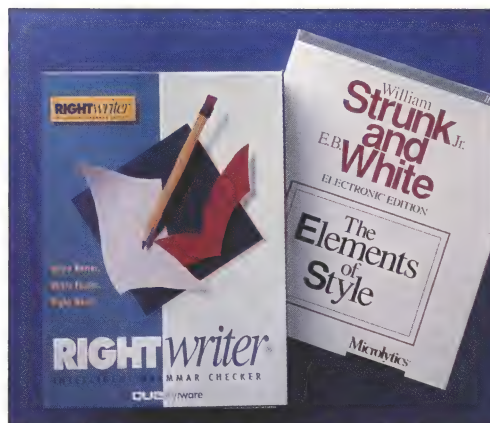
RightWriter Is the Premier Grammar and Style Checker.

It's designed to flag errors in your writing from a rule base of over 5,500 — including rules of grammar, style, usage, punctuation, sentence structure, subject-verb agreement and more. RightWriter produces a copy of the document and performs its analysis. Then displays (or prints) your document with flagged errors and explanations. These explanations are your guide to better writing. The result: clear, crisp documents that deliver your ideas with maximum impact.

You use your word processor to create your document as you normally would. When you're ready to use RightWriter, you simply press a two-keystroke sequence.

How RightWriter Knows When Your Writing is Wrong.

RightWriter proofreads your documents using two artificial intelligence (AI) technologies called parsing and expert systems. Each technology has a



separate, unique function, but together they rely on one another to identify parts of sentences and to locate errors.

Parsing performs the critical function of sentence dissection. It first identifies sentences' individual parts, breaking each sentence into major phrases and looking for both dependent and independent clauses. Parsing goes further by identifying the subject and predicate of each clause and noting the word's part of speech. This technology, for example, can tell the difference between "can" used as a noun and as a verb.

The expert system relies on the parser to break down the sentences so it can determine their accuracy. RightWriter's expert system examines your writing, judges the accuracy, and suggests improvements without your making any specific query.

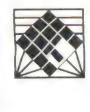
Now Runs From Within Eight Word Processors.

RightWriter's interface works within eight word processors: WordPerfect, LetterPerfect, Microsoft Word, WordStar, Professional Write, Q&A, Q&A Write and MultiMate Advantage II.

Compatible With:	Microsoft® Works	pfs: First Choice®
Bank Street Writer®	Microsoft® Write	Q&A Write®
DeskMate Text	Multimate Adm.®	Samma®
Edix/Wordix®	I & II	SideKick®
Enable®	Multimate®	VolksWriter®
HomeWord II®	New Word®	(Deluxe, Plus & 3.0)
IBM Writing Ass.®	OfficeWriter®	WordPerfect®
Leading Edge®	PC-Writer®	WordStar®
Microsoft® Word	PeachText® 5000	WordStar 2000®
Microsoft® Word for Windows	pfs: Write®	XyWrite®
	pfs: Prof. Write®	...And More

INCLUDES FREE Strunk & White's The Elements of Style Electronic Edition!

WHEN YOU BUY RIGHTWRITER PC VERSION.



que

RightWriter 4.0

AR3660 RightWriter (PC) 5 1/4" & 3 1/2" (Dual Media) \$59.95
AR3365 XENIX/UNIX \$295.00
AR3366 Mac Version \$79.95
AR3367 Network 5 Pack \$299.00

TIGERSOFTWARE TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

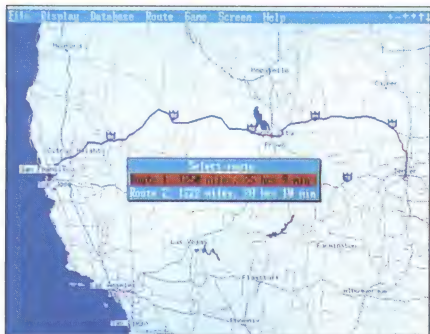
International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

The Intelligent Road Atlas For Your PC!

Planning a vacation? Heading out on the road on business? Now there's a system that helps you plan any road trip for fastest, prettiest or most convenient route — with hundreds of up-to-date, color maps right on your computer screen.

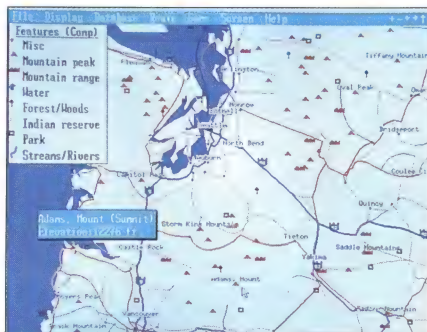
Clear, detailed maps that can get you anywhere in the United States that you want to go. Just tell AUTOMAP where you're going, when and where you'll be starting from, what areas you'd like to avoid, what areas you'd like to visit on the way and how you like to drive. It's fast, fun and informative.



Select your starting point, end destination, and areas to visit and let AUTOMAP create a detailed map of your next trip!

AUTOMAP's powerful intelligence takes over from there. Instantly, it searches its massive database of over 300,000 miles of roads and highways for the best route to meet your requirements. It even gives you a list of alternative routes if you decide you'd like to wander a bit. AUTOMAP also gives you a list of "places" from over 50,000 in its database. It's like having a travel guide pointing out the very

best there is to see and do. Business travellers won't have to worry about being unfamiliar with new territories — just a quick session with AUTOMAP and you'll know exactly where you're going.

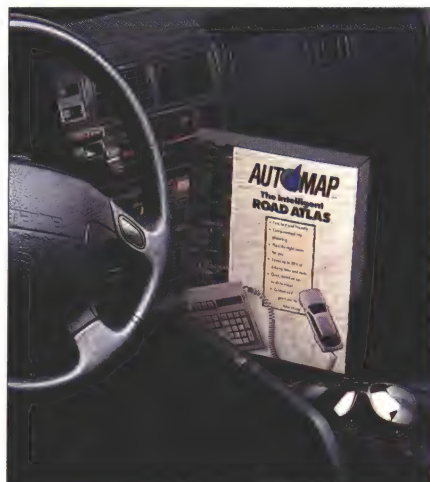


AUTOMAP's driving instructions tell you which roads to travel, how far to go, and approximate traveling time.

AUTOMAP allows you to view your entire journey as a full color map and gives you all the details on mileage. Zoom out to see the entire region, or zoom in to see every detail. AUTOMAP's driving instructions list all the roads you'll be traveling, exactly how far to go, exactly where to turn and even the signs to look for! These maps and directions can be viewed on your screen and printed out to refer to as you need them.

Government Highway Data.

AUTOMAP uses data with the renowned accuracy of government sources. It has been designed to remain accurate with constant updates of new maps and details as they become available. AUTOMAP has



proven itself with the most demanding businesspeople and vacationers. It's helpful and convenient, but more importantly, AUTOMAP will save time, money and frustration. In fact, surveys show that AUTOMAP can easily save up to 20% in driving time and related costs. There's even a built-in quiz to test your knowledge of geography.

AUTOMAP
INCORPORATED

AR4098-5 AUTOMAP 5 1/4"	\$99.95
AR4098-3 AUTOMAP 3 1/2"	\$99.95
<i>Hercules, CGA, EGA, VGA, 512K RAM, hard disk, mouse recommended.</i>	

The World at Your Fingertips.

This innovative program brings the entire globe to your computer screen, combining a complete atlas, almanac and world fact book into one exciting, informative package. You'll have instant access to over 200 fully-detailed VGA maps, ocean maps and useful international information on 270 topics in 11 categories. You'll explore the geography, people, government and economy of any nation on Earth, including such details as climates, population, language, labor force, military strength, industry, highways and more.

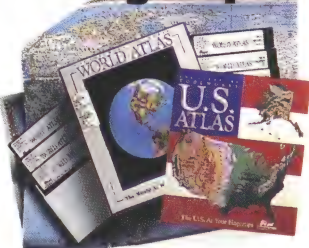
Indispensable Guide and Reference Tool.

World Atlas is an ideal reference tool for travelers, educators, business people, librarians and students. With just a couple of keystrokes maps and data are on your screen.

You don't need to learn lengthy commands. Just point to a country on any index map, click — the desired map appears instantly. From there, simply select specific information and statistical maps for individual countries from sleek, drop-down menus. Easily print customized reports mixing maps and text — even export maps to desktop publishing programs.

NEW! U.S. ATLAS

U.S. Atlas brings the entire North American continent to your computer screen! Just click on a state or city



to explore such information as: population, average temperatures, and local time.

INTRODUCING ATLAS PACK

Both of these titles — just \$79.95!

These Titles Now Available for Windows 3.0.



World Atlas

AR3225 World Atlas 5 1/4"	\$59.95
AR3220 U.S. Atlas 5 1/4"	\$59.95
AR3230 Atlas Pack (World & U.S.)	
5 1/4" ... Save \$30 ...	\$79.95
AR5520 World for Windows	\$69.95
AR5510 USA for Windows	\$69.95
<i>IBM PC or compatibles with 640K. Hard disk; EGA or VGA graphics card color monitor; Microsoft mouse or compatible.</i>	

End Arguments in 5 Seconds!

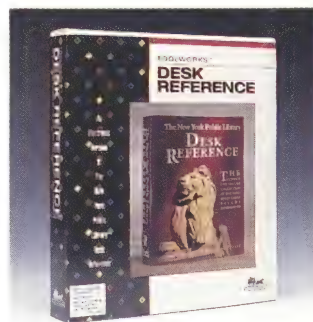
The New York Public Library Desk Reference — On Disk!

This is it! Ask any question. Verify any detail. Create instant research. Get the answer now using your PC—and a fascinating collection of information from the most respected single-source in publishing: The New York Public Library Desk Reference.

The hardcover book, a masterpiece of useful information, is now on diskette, combined with powerful search and retrieval capabilities for instant access to any detail, fact, idea, character, achievement — whatever you're after. Quick, concise sections give you information with just a glance. The electronic edition of the New York Public Library Desk Reference contains thousands of entries on everything from finances, philosophy, animals, sports, academy awards, major corporations, abbreviations, music and etiquette to religion, calorie consumption, nutrition, state names, cooking, symbols and signs, copyrights, consumer bureaus, bartending, poison control hotlines, card games and computer terms. But there's so much more! Industry, literature, the metric system, television, space travel, hard-to-find addresses and phone numbers, first aid and more — 26 major categories

in all. It's interesting just browsing through topics at random.

More than an almanac, The Desk Reference is a compilation of the most frequently sought facts at the world's busiest public library. This incredibly handy software resource allows you to explore multiple entries simultaneously for fast cross reference and perform easy cut-and-paste directly into your document. It's equipped with a streamlined table of contents and indexing system so you'll spend no time at all finding what you need. And all of this information requires just 20K.



Desk Reference

AR3240 Desk Ref. 5 1/4" & 3 1/2"	\$69.95
AR5530 Windows Ver. Dual	\$69.95
<i>IBM PC or compatibles with 640K. DOS 3.1 or higher. hard drive required.</i>	

TIGERSOFTWARE

TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Circle 259 on reader service card

SEPTEMBER 1991 PC WORLD 99



STRANDED?

Your Search Is Over, Our New PRICE-CUTS Will Buy You A Vacation



80286-AT \$1195

- 80286 16MHz CPU
- 1.2 MB 5.25" Floppy Drive
- 1.44 MB 3.5" Floppy Drive
- 1 MB System RAM
- 42 MB IDE Hard Drive
- 14" VGA Anti Glare Color Monitor
- 16 Bit VGA Graphics Card
- Parallel/Game/Serial Ports
- Microsoft DOS
- MS Compatible Mouse

OPTIONS

- 12, 20 MHz Processor
- 2, 4 MB System RAM
- 90 MB Hard drive



80386SX \$1395

- INTEL 80386SX-16MHz CPU
- 1.2 MB 5.25" Floppy Drive
- 1.44 MB 3.5" Floppy Drive
- 2 MB System RAM
- 42 MB IDE Hard Drive
- 14" 1024X768 Color VGA Multiscan Monitor
- 16 Bit 512K VGA Adapter
- Parallel/Game/Serial Ports
- Microsoft DOS
- Windows 3.0 w/Mouse

OPTIONS

- 20 MHz CPU, 32K Cache
- 2, 4, 8 MB System RAM
- 90, 131 MB Hard Drive



80386-33 \$2195

- INTEL 80386 - 33MHz CPU
- 64K Static Cache RAM
- 1.2 MB 5.25" Floppy Drive
- 1.44 MB 3.5" Floppy Drive
- 4 MB System RAM
- 131 MB IDE Hard Drive w/ 32K Cache 18ms
- 14" 1024X768 Color VGA Multiscan Monitor
- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
- Microsoft DOS
- Windows 3.0 w/Mouse
- Tower or Desktop Case

OPTIONS

- 25 MHz CPU
- 8, 16, 32 MB RAM
- 90, 200 MB Hard Drive
- **15"** NI Flat Screen Display



80486 \$2695

- INTEL 80486 - 25MHz CPU
- **128K Static Cache RAM**
- 1.2 MB 5.25" Floppy Drive
- 1.44 MB 3.5" Floppy Drive
- 4 MB System RAM
- 131 MB IDE Hard Drive w/ 32K Cache 18ms
- 14" 1024X768 Color VGA Multiscan Monitor
- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
- Microsoft DOS
- Windows 3.0 w/ Mouse
- Tower or Desktop Case

OPTIONS

- 33 Mhz CPU, 256K Cache
- 8, 16, 32, 64 MB RAM
- 200, 330 MB Hard Drive
- **15"** NI Flat Screen Display

"NOBEL's new and aggressive price-cuts, without sacrificing any standard features will revolutionize the PC market"

- July 1991.

SALES HOURS: Weekdays 9:30 - 7:30 (EST)
Saturdays 10:00 - 6:00 (EST)



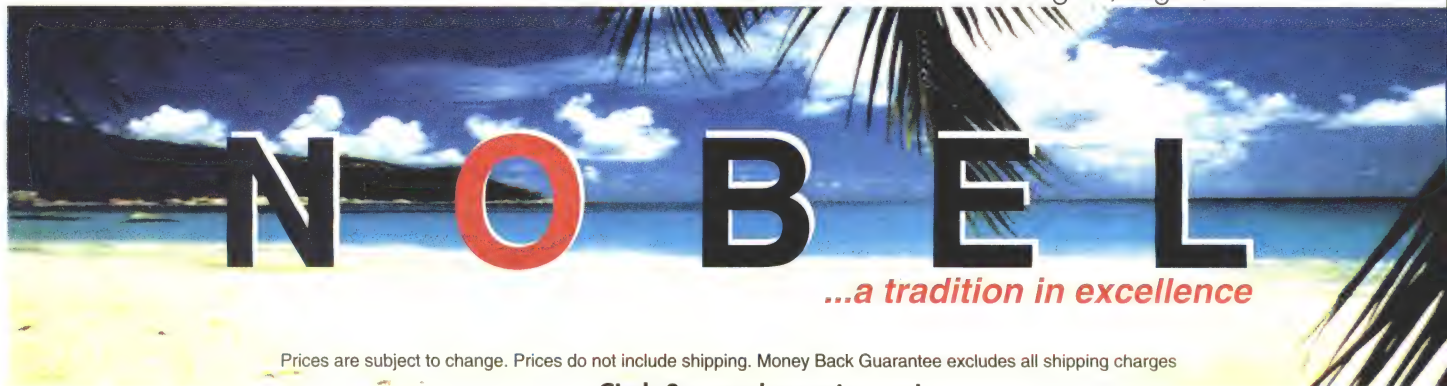
Call for custom configurations.

STANDARD SYSTEM FEATURES

- 30-Day Money Back Guarantee
- 2 Years Labor / 1 Year Parts Warranty
- Lifetime Toll Free Technical Support
- Government Purchase Orders
- Custom Configurations
- Free Overnight Replacement
- 48 Hours System Burn-In
- Corporate Leasing Options

1-800-486-6700

Newington, Virginia.



NOBEL

...a tradition in excellence

Prices are subject to change. Prices do not include shipping. Money Back Guarantee excludes all shipping charges

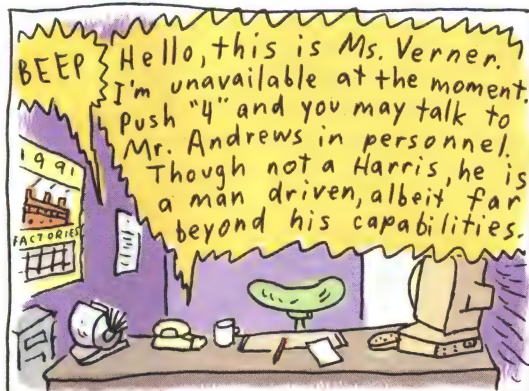
Circle 2 on reader service card

TWO-FISTED MANAGEMENT

TWO-FISTED MANAGEMENT

If at first you don't succeed, call, call again.

MARK,
35



With all this acclaim, yo

"The MSF-300Z color/gray scanner is a breakthrough product in price, image quality and value. Microtek has set a clear standard for affordable, quality color scanning."

MacUser March 1990

MacUser



"At \$2,695, Microtek's scanner isn't only the least expensive flatbed scanner we looked at, it's also the best."

Publish March 1990

★★★★★
FIVE STAR AWARD 1990
Publish

Guess

Introducing the ScanMaker family of affordable flatbed and slide scanners.

Microtek's color scanner has consistently earned awards, praise and top ratings as the best value in scanning. But, if you thought we'd rest on our laurels, we've got news for you.

The leader in high quality, low cost scanning is at



From presentations and newsletters to pre-press and comp work, the ScanMaker 600Z handles it all. It boasts 24 bit

The totally redesigned ScanMaker 600Z offers higher resolution for a lower price.

color, 8 bit gray-scale and an incredible 600 dpi resolution.

But the most dramatic news is that we've given it an incredible low price to match.

Add to

that a sleek, compact design that fits neatly in your work space. And you've got the color scanner that others will be hard pressed to match.



Both ScanMaker models include either PhotoStyler or Adobe Photoshop, absolutely free.



it again with the ScanMaker 600Z. The all new ScanMaker 600Z is the perfect tool for desktop publishers who demand outstanding image quality and versatility in a flatbed scanner.

think we'd be satisfied.

"If you need color, we recommend the Microtek MSF-300Z. It's the least expensive full-sized color/gray-scale scanner..."



MacUser September 1990

"...the Microtek MSF-300Z is a clear winner, again, because it comes complete and the software is easy to use."

MACWORLD

Macworld August 1990

again.

If you need high quality scans of 35mm slides, take a look at the revolutionary ScanMaker 1850.



The first affordable slide scanner for the serious publishing professional.

It offers 24 bit color and 8 bit gray-scale capabilities. And it's also easy to use. Just drop in a slide and you're ready to start scanning. At resolutions up to 1850 dpi.

And best of all, it costs thousands less than other comparably equipped slide scanners. Which explains why the ScanMaker 1850 is the logical choice for 35mm slide scanning.



ScanMaker 600Z
(PC) \$1,995
ScanMaker 600ZS
(Mac) \$2,195
ScanMaker 1850
(PC) \$2,995
ScanMaker 1850S
(Mac) \$3,195



If all this weren't enough, both ScanMaker models include the latest image processing software. Enhance, refine and separate your images with

The ScanMaker 1850 scans any 35mm slide for thousands less than other comparable slide scanners.

the full version of Adobe Photoshop for the Macintosh or PhotoStyler from

U-Lead Systems for Windows 3.0.

So, whether you're working in black and white or color, with photographs or 35mm slides, get a ScanMaker scanner from Microtek. We won't be content until you're satisfied.

For information or the name of your nearest dealer, call us at 800-654-4160 or in California,

call 213-321-2121.

MICROTEK
Better Images Through Innovation.

EXPERIENCE

Salvation™

Microsoft Windows System

Microsoft® opened your computer with Windows™. Vitesse opens the door for you with Salvation!

Salvation is the friendliest graphic user interface (GUI) available to Windows users. Replace and integrate most Windows file utilities with Salvation.

Salvation's exclusive BUTTON LAUNCHERS™ offers the ability to easily launch either Windows or DOS applications. You automatically or manually program BUTTON LAUNCHERS™ and add your own personal icon.

Salvation file utilities makes management of all your disks a simple task. You can move copy, delete, rename, or easily create both files and subdirectories. In addition to launching, Salvation automatically handles text and graphics files. Salvation even provides security access to your files.

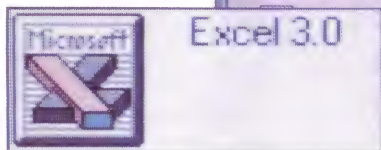
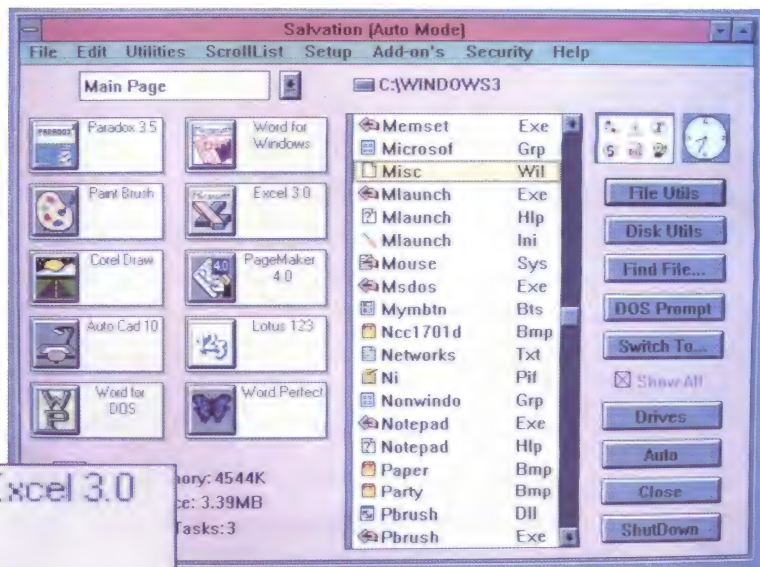
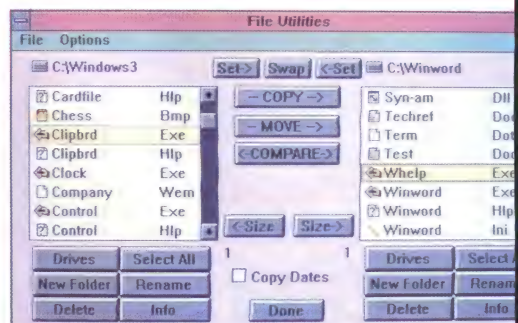
Salvation's features gives your computer maximum power and the most understandable GUI in the PC environment.

EXPERIENCE SALVATION for only \$179.95 (suggested retail)

Contact your dealer or call Vitesse at (800) 777-7344 FAX (818) 813-1273. DEALER INQUIRES WELCOME. We accept VISA & Mastercharge.

© Copyright 1991 Vitesse, Inc.. All Rights reserved. All company and product names are trademarks of their respective companies.

Circle 299 on reader service card



PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

IBM's Counter-Clones

Three bargain 20-MHz 386SX models—two with old-fashioned AT slots—spearhead a counterattack on creeping clonism.



PS/2 Models 57, 40, and 35, with base prices proudly displayed. The 40 and 35 have standard AT slots; the 57, a Micro Channel unit, comes with a 2.88MB floppy drive.

Alan Kaplan



Pick up the business section these days and you're apt to read that IBM has lost its luster. A growing number of PC purchasers are breezing past the Big Blue emblem and opting for speedier, cheaper clones with more room for memory, boards, and drives. Until recently, IBM seemed unable to respond to the challenge.

Now the giant is fighting

back with three new PS/2s: Models 35, 40, and 57. IBM's first 20-MHz 386SX desktops, these boxes offer more memory capacity, lower prices, and—in Models 40 and 57—more room for boards and drives than any other IBM desktop system.

Surprisingly, two of the units come with AT slots instead of the usual Micro Channel slots, an acknowledgment that not everyone likes the smaller selection and premium prices of Micro Channel expansion boards. IBM also sets a new standard with these sys-

tems by introducing a 2.88MB 3½-inch disk drive.

Aside from the floppy drive, you'll discover no new technology of note in any of these systems. And as PC World Test Center results reveal, IBM's first 20-MHz SX desktops perform much like most IBM units—below average in their class. Clearly these machines are designed to appeal to people who are already enamored of IBM's vaunted service, reliability, and stability as a company but who need a better price to convince them to pony up for the hardware.

Hardball on the Desktop

The most aggressively priced of the new PS/2s, the Model 35 competes against low-priced generic boxes. It starts at less than \$2000 and comes in two basic flavors: a medialess LS version with a Token-Ring (and a promised ethernet) board that occupies one of three horizontal full-sized AT slots; and a stand-alone version with 3½-inch floppy drive and choice of 40MB or 80MB 17ms hard drive.

The Model 35 occupies a little less desk space than the Model 30, and has three expansion slots and room for only two drives. The box is a hefty 23.6 pounds including hard and floppy drives, with more than a third of the weight

SNAPSHOT

IBM PS/2 Models 35, 40, 57

IBM's first 20-MHz 386SX desktops offer lower prices and memory, boards, and drives.

KEY FEATURES

- 2.88MB floppy drive available (standard on Model 57)
- 20-MHz 386SX performance
- Room for 16MB RAM on motherboard
- Standard AT slots in Models 35 and 40

AVAILABILITY

Immediate

PRICING

Model 35 \$1995–\$2695
Model 40 \$2395–\$3195
Model 57 \$3625–\$4195

IBM U.S.

1133 Westchester Ave.
White Plains, NY 10604
800/426-2468

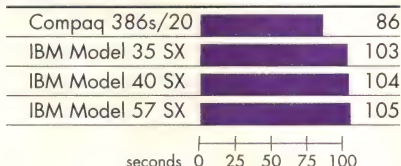
Reader service no. 695

PC WORLD TEST REPORT

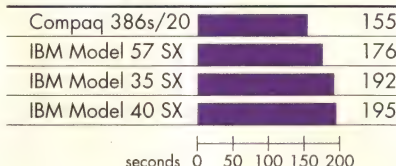
PS/2s Push Price Over Performance

Inexpensive? Fairly. But IBM's new 20-MHz SX systems average over 20 percent slower than Compaq's Deskpro 386s/20.

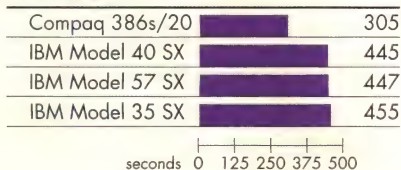
WordPerfect



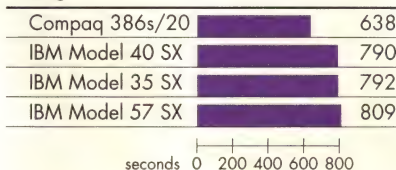
Windows 3.0



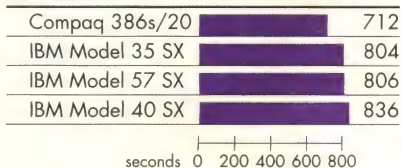
AutoCAD



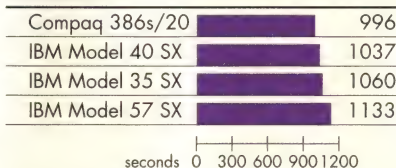
1-2-3



dBASE IV



Paradox



Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

in the heavy-gauge wrap-around case cover.

As befits a member of the PS/2 family, the Model 35 integrates VGA video, floppy and hard disk adapters, and serial and parallel ports on the motherboard, leaving all slots free. (The evaluation system we received had several jumper wires routed across the motherboard, suggesting an early unit.) Three memory sockets hold 1MB, 2MB, 4MB, or 8MB SIMMs; the 2MB module comes standard. With the new 8MB modules, the system can hold 16MB of RAM on the motherboard.

At \$1995, the floppy-only Model 35 SX 040 is now the least expensive 386 PS/2, though its raw price is nothing

to write home about. Faster 25-MHz 386DX floppy-only clones with equivalent memory and more slots, more bays, and better displays sell by mail for up to a third less; they retail for comparable prices. Clones do not, however, carry IBM's considerable cachet. The Model 35 will be welcomed by corporate IBM shops willing to trade some price and expandability for the warmth and fuzziness of the beloved Blue blanket.

Boxes With Room to Grow

The Model 40 is a more expandable system, 17 inches wide by 15 inches deep with five full-length slots for 8/16-bit AT boards, two more than have ever appeared in a PS/2

desktop. Instead of the usual three 3½-inch drives, the Model 40 can handle three 5¼-inch drives and one 3½-inch.

Nonetheless, the Model 40's chassis is no marvel of engineering. Its 197-watt power supply is unusually large and awkwardly shaped, robbing the enclosure of room for two more 3½-inch drives. And as with the Model 35, the trademark PS/2 drives that slide right into an adapter have been replaced by the old-fashioned kind that require a ribbon cable.

While the Model 40 has three fewer add-in board slots than similar clones, its motherboard includes the VGA video and drive controllers, leaving all five slots avail-

able. Boards are mounted horizontally in a tree adapter rising from the center of the motherboard. Base RAM and options are identical to the Model 35's. Price with 2MB of RAM, 1.44MB floppy drive, and 40MB hard disk is \$2925.

PS/2 de Resistance

At the top end is the Model 57, a Micro Channel version of the Model 40. The Model 57's performance matched the Model 40's in our benchmarks, but IBM claims the machine will show speed advantages in heavy-duty multitasking thanks to the Micro Channel's support of bus-master devices.

Other key differences between the Model 57 and the Model 40 include a SCSI (instead of IDE) hard disk controller on the motherboard; an additional 2MB of RAM, with 4MB standard and 16MB supported on the motherboard; and the new 2.88MB drive (which IBM will make generally available for \$325, \$62 more than its 1.44MB drive). The Model 57 goes for \$3625 with an 80MB hard drive, \$4195 with a 160MB drive.

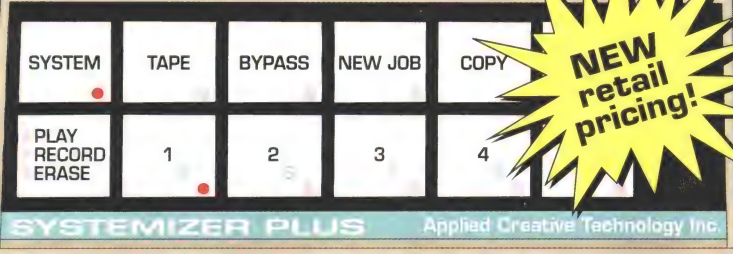
Besides doubling data on a 3½-inch disk, the 2.88MB floppy can read and write 1.44-MB and 720K disks. If you plan to upgrade to this drive, remember that the new high-density standard requires DOS 5.0. You'll likely need media rated for higher density.

One Step Forward...

The new models round out the PS/2 line, but not remarkably. Except for the 2.88MB floppy drive, no new technology is involved, no significantly new packaging, no new anything. The lower-than-usual prices (for IBM) merely reflect market pressures. The original promise of the PS/2 line—uniquely powerful Micro Channel goodies as well as cableless hardware upgrades—remains largely unfulfilled.

Computer Users...

UNITE!



with **SYSTEMIZERS®**



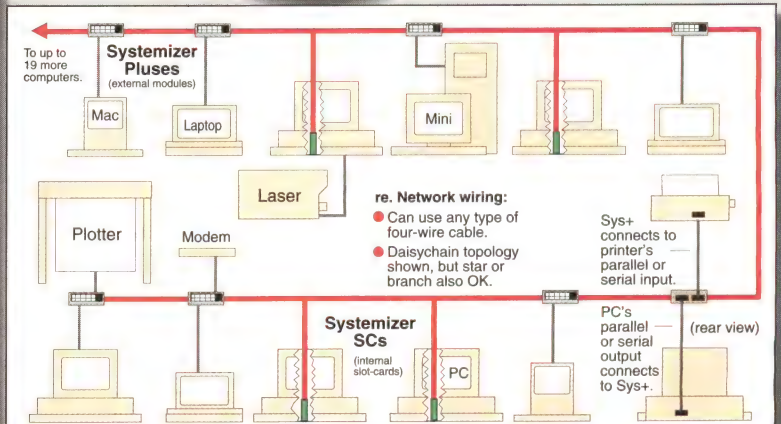
The
**NO
RAM
LAN™**

Several models available. The **Systemizer® Plus** shown above is an externally-mounted module. Because it's self-contained and requires NO software in the computer, it can work with practically any computer, operating system and application program. Available with 256K or 1 Meg buffer.

Up to 31 users can:

- Share Printers
- Exchange E-Mail*
- Share a Modem
- Exchange Data
- Share a FAX
- Share Plotters

(*Electronic mail software provided for MS-DOS PCs only)



Example Systemizer® network consisting of 11 micros and a minicomputer, sharing 3 printers and a modem via a mixture of Systemizer Pluses and Systemizer SCs. Note: though not shown here, some of the computers could also be connected to a traditional LAN or WAN.

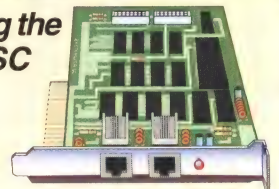
Systemizers® are a network-like approach to sharing peripherals and exchanging data, consisting of externally-mounted modules or internally-mounted slot-cards that link together to form a network. The external modules do not require any memory-resident software in the computers. Systemizing™ is a time-tested proven technology, having become the connectivity standard at many of the world's largest corporations and throughout the U.S. and Canadian federal governments. Almost 100,000 users! Why? Because Systemizers yield most of the benefits of networking without the associated costs and complications. And yet, Systemizers fit perfectly into a corporate networking strategy because they will work in conjunction with any LAN or WAN. A company can therefore selectively employ both technologies: Systemizers for the ultimate in cost-effective peripheral sharing, E-Mail and file transfer, and where needed, a LAN for users who must access a central database.

Systemizers are a hassle-free, universally-compatible connectivity solution, requiring little expertise to install and no end-user support. Avoid becoming a slave to a network expert or outside contractor.

Models available to fit any budget and application. Available from selected dealers, or direct. On GSA contract, too.

**Network using the
Systemizer SC
for only...**

\$199!
MSRP



ISA slot card uses only 27K of RAM. MCA version available.

CONNEXPERTS®
Expertise in connectivity

**For a free demo call: (800) 433-5373
or fax: (214) 696-3925**

A Division of Applied Creative Technology, Inc. Dallas, TX U.S.A.

Circle 19 on reader service card

IBM Introduces 50-MHz 486 Upgrade

The first systems announced for Intel's prized 50-MHz 486 processor are IBM products, and existing ones at that. IBM will offer a 50-MHz 486 upgrade to its PS/2 Model 90 and Model 95 XP 486.

The PS/2 upgrade is a replacement card for 20-MHz, 25-MHz, and 33-MHz Model 90s and Model 95 XPs that IBM claims will

double the speed of its 25-MHz systems, and offer half again the speed of 33-MHz systems.

In practice the performance increase may be less dramatic. Standard memory can't be accessed directly at blazing 50-MHz speed, so a 256K secondary memory cache (in addition to the 486's 8K internal cache) is hardwired

onto the upgrade board to act as a buffer. When the 486 can't find what it needs in either cache, it adds four wait states for main memory access.

Upgrades are \$3695 for 33-MHz systems, \$5345 for 25-MHz systems, and \$7245 for 20-MHz 486SX systems. They'll probably be available in limited quantities late this year.

Who'll want to upgrade? CAD users, of course, along with those who need a server that actually runs SQL data base programs or other back-end applications rather than simply serving files. For the rest of us, however, an upgrade that costs more than many vendors' 486 systems may be hard to justify.

Has Big Blue lost its ability to innovate?

The latest PS/2s don't advance the state of the art, but they'll doubtless improve

IBM's lot. The company's diminished clout notwithstanding, the PS/2 Model 55 SX is still the world's biggest-selling PC. The new additions to the

line—models 35, 40, and 57 succeed that system, and their lower cost, greater expansion capacity, and faster clock speed will help them find

homes on many corporate desktops. ☉

Alan Kaplan is a contributing editor for PC World.

CRAM IT!

Double the size of your hard disk for \$69 with DoubleDisk!

Need more disk space? DoubleDisk is the proven 100% safe way to compress your data, and it's totally compatible with all DOS programs.

No hardware hassles!

DoubleDisk doesn't require any additional hardware. So there's no need to spend \$\$\$ on plug in boards.

Get twice the storage!

DoubleDisk automatically compresses and expands your files on the fly, using 50% less disk space.

"...Mostly, you won't even know it's there."

—New York Times, 4/9/91

Works invisibly.

DoubleDisk runs in the background when you turn on your PC. You still copy, create directories, backup, restore by using normal DOS commands.

Easy to install and Use!

Double Disk installs in just minutes and runs automatically. Order today and save \$60!

DoubleDisk Suggested Retail \$129

only \$69

Offer expires 10/31/1991
Includes 5.25" & 3.5" disks.
Order #Y70370.

Published by: Vertisoft Systems, Inc.


Credit cards orders only please.

Order Now! 1-800-423-3556

Selective
software

The software you always wanted but could never find.
3004 Mission St., Suite H, Santa Cruz, Ca. 95060



The Three Most Important Reasons Why Companies Big and Small are Turning to PC Brand...

PC BRAND™

Finally, a computer company that specializes in satisfied customers.

Circle 198 on reader service card

New Lower Prices!
Call Today 1-800-PC Brand

The Three Most Important Companies Big and Small Price, Quality,

386/SX

Application Workstation

- 16MHz 80386SX CPU Operating at Zero Wait States
- 512K RAM (expandable to 8MB) ■ 40MB Hard Drive
- 12" Mono Graphics Monitor ■ Mono Graphics Card

\$997 Lease for: \$39/month

Add \$150 for SX/20MHz with 64K Cache

386/SX

VGA Color Workstation

- 2MB RAM (expandable to 8MB)
- 40MB Hard Drive
- 14" VGA Color Monitor (640x480 res)
- 16 Bit Super VGA Card

\$1,346

Add \$150 for SX20MHz with 64K Cache

Lease for \$52/month

386/SX

Super Windows Workstation

- 2MB RAM (expandable to 8MB)
- 80MB Hard Drive
- 14" Super VGA Color Monitor (1024x768 res.)
- 16 Bit Super VGA Card
- Dos 5.0/ Windows 3.0/ Mouse

\$1,695

Add \$150 for SX20MHz with 64K Cache

Lease for \$65/month

- On-Site Service by TRW†
- 30-Day Money Back Guarantee
- Our 5-Year Prorated Warranty
- Unlimited Toll-Free Support
- Volume Purchase Discounts
- Tech Support Bulletin Board.

"The PC Brand

386/SX

performed at

least as well as

the far costlier

Compaq...

We simply began

marveling at

what is surely

the best bargain

in personal

computing."

-Computer Buyer's Guide

PC Brand 386SX

Product Review

We Will Customize

Any system to your

exact specifications,

with name brand

Hardware and

Software products

from vendors like

Novell, NEC, Paradise,

ATI and many others,

at outstanding prices.

Call for quotation.



All Systems Feature:

- 1.2 MB or 1.44MB Floppy Drive
- 1 Parallel and 2 Serial Ports
- 101 Key Click/Tactile Keyboard
- 200 Watt Power Supply
- Real Time Clock/Calendar with 5-Year Battery
- Desk-Top or Slim-Line Case

Prices & specifications subject to change. †TRW-National Computer Maintenance Services-Free 90 Day on site service for 386/SX, 386/DX, and 486's for customers located within a 100 mile radius of any of over 200TRW service centers. On site service for 286's available at extra cost. Call for details.*Monthly payments based on 36 month Lease.

Important Reasons Why are Turning to PC Brand and Support.



**"Best Low-Cost
Alternative Around"**

**-PC Magazine,
25MHz 386 PC's**

**"Faster than a
Speeding Bullet!"**

**-Computer Shopper
Cover Story**

**Ask About Our
Optional Service Plus
Program**

Guaranteed Trade-In
on your existing PC
Brand Computer when
you Up-Grade to one
of our more Powerful
models and On-Site
Service for up to 5-
Years. Call for details.

**286's also
Available**

Video Options

- Mono Graphics
- VGA Mono
- VGA Color (640 x 480)
- Super VGA Color (1024x768)

Case Options

- Slim Line
- Mini Tower
- Server Tower
- Desk Top

Hard Drive Options

- 40MB
- 100MB
- 320MB
- 80MB
- 200MB
- 640MB

386/DX-25

Application Workstation

- 25MHz 80386DX CPU Operating at Zero Wait States
- 1MB RAM (expandable to 16MB) ■ 40MB Hard Drive
- 12" Mono Graphics Monitor ■ Mono Graphics Card

\$1,377

**Lease for:
\$53/month**

386/DX-25 VGA Color Workstation

- 2MB RAM (expandable to 16MB)
- 40MB Hard Drive
- 14" VGA Color Monitor (640x480 res.)
- 16 Bit Super VGA Card

\$1,743

Lease for \$67/month

386/DX-25 Super Windows Workstation

- 2MB RAM (expandable to 16MB)
- 80MB Hard Drive
- 14" Super VGA Color Monitor (1024x768 res.)
- 16 Bit High Performance Super VGA Card with 1MB
- DOS 5.0/Windows 3.0/ Mouse

\$2,092

Lease for \$81/month*

PC BRAND

Call 1-800-PC Brand.

TEL 1-800-722-7263 FAX 1-800-722-7392

PC Brand, Inc. 877 Supreme Drive, Bensenville, IL 60106 • International Fax # 708-616-2888 International Voice # 708-860-2300. We are open Mon. thru Fri. 7am to 7pm; Saturday 8am to 4pm Central Time. MasterCard, VISA, Discover, PC Brand Direct Advantage MasterCard, Checks & Approved P.O.s Accepted. Prices & specifications subject to change. 386, SX, 387, 486 are Trademarks of Intel Corporation.

WCR991

Circle 198 on reader service card

**New Lower Prices!
Call Today 1-800-PC Brand**

The Three Most Important Companies Big and Small Price, Quality,

386/DX Cache Application Workstation

- 25MHz 80386DX CPU Operating at Zero Wait States
- Cache Processor with 32K Static RAM
- 1MB RAM (expandable to 16MB) ■ 80MB Hard Drive
- 14" VGA Monochrome Grey Scale Monitor (640x480 res.)
- 16 Bit Super VGA Card

\$1,697

Lease for:
\$65/month

Add \$150 for 386/33MHz

386/DX Cache VGA Color Workstation

- 2MB RAM (expandable to 16MB)
- 100MB Hard Drive
- 14" VGA Color Monitor (640x480 res.)
- 16 Bit Super VGA Card

\$2,043

Add \$150 for 386/33MHz
Lease for \$79/month*

386/DX Cache Super Windows Workstation

- 2MB RAM (expandable to 16MB)
- 100MB Hard Drive
- 14" Super VGA Color Monitor (1024x768 res.)
- 16 Bit High Performance VGA Card with 1MB
- Dos 5.0/Windows 3.0/ Mouse

\$2,272

Add \$150 for 386/33MHz
Lease for \$88/month*

- On-Site Service by TRW†
- 30-Day Money Back Guarantee
- Our 5-Year Prorated Warranty
- Unlimited Toll-Free Support
- Volume Purchase Discounts
- Tech Support Bulletin Board.

**"...Flawless
Compatibility,
Lowest Price."**

**-InfoWorld,
PC Brand 386/33,
Product Review**



We Will Customize

Any system to your exact specifications, with name brand Hardware and Software products from vendors like Novell, NEC, Paradise, ATI and many others, at

**286's also
Available**



All Systems Feature:

- 200 Watt Power Supply
- 1.2 MB or 1.44MB Floppy Drive
- 1 Parallel and 2 Serial Ports
- 101 Key Click/Tactile Keyboard
- Real Time Clock/Calendar with 5-Year Battery
- Desk-Top or Slim-Line Case

Prices & specifications subject to change. †TRW-National Computer Maintenance Services-Free 90 Day on site service for 386/SX, 386/DX, and 486's for customers located within a 100 mile radius of any of over 200 TRW service centers. On site service for 286's available at extra cost. Call for details.*Monthly payments based on 36 month Lease.

Important Reasons Why We're Turning to PC Brand and Support.

*"The PC Brand
486/33 showed
better speed and
expansion than
machines costing
twice as much.
For a good number
of users, the
search for a 486/
33 will end with
this machine."*

**-PC Magazine,
PC Brand 486/33,
Product Review**

Ask About Our Op- tional Service Plus Program

Guaranteed Trade-In
on your existing PC
Brand Computer when
you Up-Grade to one
of our more Powerful
models and On-Site
Service for up to 5-
Years. Call for details.

Video Options

- Mono Graphics
- VGA Mono
- VGA Color (640 x 480)
- Super VGA Color (1024x768)

Case Options

- Slim Line
- Mini Tower
- Server Tower
- Desk Top

Hard Drive Options

- 40MB
- 100MB
- 320MB
- 80MB
- 200MB
- 640MB

486/ISA

Application Workstation

- 25MHz 80486DX CPU Operating at Zero Wait States
- Built-In 8K 4-Way Set Associative Cache
- Optional 128K Secondary Cache (standard w/486/33MHz)
- 1MB RAM (expandable to 16MB) ■ 80MB Hard Drive
- 14" Monochrome Grey Scale Monitor ■ 16 Bit Super VGA Card

\$2,147

Lease for:
\$83/month

Add \$300 for 486/33MHz

486ISA

Super Windows Workstation

- 4MB RAM (expandable to 16MB)
- 100MB Hard Drive
- 14" Super VGA Color Monitor (1024x768 res.)
- 16 Bit High Performance Super VGA Card with 1MB
- DOS 5.0/Windows 3.0/Mouse

\$2,785

Add \$330 for 486/33MHz
Lease for \$107/month*

486ISA

Network Tower Server

- 4MB RAM (expandable to 16MB)
- 16 Bit Server LAN Adapter Card Supporting both Ethernet and 10-Base T
- 200MB Hard Drive
- 12" Mono Graphics Monitor
- Mono Graphics Card
- Server Tower Case

\$2,894

Add \$330 for 486/33MHz
Lease for \$111/month*

PC BRAND

Call 1-800-PC Brand.

TEL 1-800-722-7263 FAX 1-800-722-7392

PC Brand, Inc. 877 Supreme Drive, Bensenville, IL 60106 • International Fax # 708-616-2888 International Voice # 708-860-2300. We are open Mon. thru Fri.: 7am to 7pm; Saturday 8am to 4pm Central Time. MasterCard, VISA, Discover, PC Brand Direct Advantage MasterCard, Checks & Approved P.O.s Accepted. Prices & specifications subject to change. 386, SX, 387, 486 are Trademarks of Intel Corporation.

Circle 198 on reader service card

W09091

New Lower Prices!
Call Today 1-800-PC Brand

PC Brand 486/33 EISA



486/33MHz EISA Application Workstation

- 486/33 MHz CPU Operating at Zero Wait States
- 256K Secondary Cache
- 4MB RAM (expandable to 64MB)
- 80MB Hard Drive ■ 16 Bit Super VGA Card
- 14" VGA Monochrome Grey Scale Monitor (640x480 res.)

\$3,997
Lease for: \$154/month*

486/33MHz EISA Super Windows Workstation

- 4MB RAM (expandable to 64MB)
- 100MB Hard Drive
- 14" VGA Color Monitor (1024x768 res.)
- 16 Bit High Performance Super VGA Card with 1MB
- DOS 5.0/Windows 3.0/ Mouse

\$4,476
Lease for \$172/month*

486/33MHz EISA Network Tower Server

- 4MB RAM (expandable to 64MB)
- High Performance EISA Ethernet Card
- 200MB Hard Drive
- 12" Mono Graphics Monitor
- Mono Graphics Card
- Server Tower Case

\$4,826
Lease for \$185/month*

All Systems Feature:

- 1.2 MB or 1.44MB Floppy Drive
- 1 Parallel and 2 Serial Ports
- 101 Key Click/Tactile Keyboard
- 200 Watt Power Supply
- Real Time Clock/Calendar with 5-Year Battery
- Desk-Top or Optional Server Tower Case

Video Options

- Mono Graphics
- VGA Mono
- VGA Color (640 x 480)
- Super VGA Color (1024x768)

Hard Drive Options

- 40MB • 200MB
- 80MB • 320MB
- 100MB • 640MB

PC Brand, Inc. 877 Supreme Drive, Bensenville, IL 60106 • International Fax #708-616-2888 International Voice #708-860-2300. We are open Mon. thru Fri.: 7am to 7pm; Saturday 8am to 4pm Central Time. MasterCard, VISA, Discover, PC Brand Direct Advantage MasterCard, Checks & Approved P.O.s Accepted. Prices & specifications subject to change. 386, SX, 387, 486 are Trademarks of Intel Corporation. Prices & specifications subject to change. †TRW-National Computer Maintenance Services-Free 90 Day on site service for 386/SX, 386/DX, and 486's for customers located within a 100 mile radius of any of over 200TRW service centers. On site service for 286's available at extra cost. Call for details.*Monthly payments based on 36 month Lease.

PC BRAND™

Call 1-800-PC Brand.

TEL 1-800-722-7263 FAX 1-800-722-7392

Circle 198 on reader service card

WOR991

A New Plain in Color Printing

Tektronix's Phaser Jet PXi offers high-quality plain-paper color for under \$10,000.



The Phaser Jet PXi prints vibrant colors and 300-dpi text on the paper of your choice.

Daniel Tynan

Do you need an affordable, plain-paper color printer? If you want to print full-color proofs of marketing brochures, sales catalogs, or product packaging, chances are you do. But until recently, your choices were limited.

At \$2500, liquid ink jets handle plain paper cheaply, but their low resolutions (216 dots per inch or lower) make text hard to read. A \$10,000 thermal transfer printer gives you 300-dpi output but craves expensive high-gloss paper. And unless you've got \$50,000 to burn, don't even think about a color laser.

Now Tektronix offers a fourth option. The Phaser Jet PXi combines the vivid colors and sharp text of a thermal printer with the ability to

print on any kind of paper, from photocopier bond to heavy cover stock. For \$9995, you also get top-of-the-line graphics and full-tabloid printing capabilities (to the edge of an 11-by-17-inch page).

Hot Stacks of Wax

The Phaser Jet is not your typical color printer. Instead of using liquid ink cartridges or a thermal printer's sheets of colored Mylar, it employs solid ink sticks in four colors (cyan, magenta, yellow, and black), which it melts and combines to create up to 16 million shades. The printer then fuses the ink drops to the paper, allowing light to pass through—essential for printing transparencies. (Still, you'll likely get better transparencies from a thermal, thanks to its thinner coats of Mylar.)

A slot on top of the printer makes adding ink as easy as dropping bread into a toaster. Because you replace each color separately, a four-color page costs about 25 cents—half the cost of thermal output.

All that color talent isn't much good without top-notch fonts and graphics capabilities. The Phaser Jet features Adobe PostScript Level 2, which promises improved performance and better color matching with 1200-dpi imagesetters, as well as 35 scalable fonts. The printer also contains a fast 24-MHz RISC chip and 10MB of RAM (expandable to 18MB) for quick processing of big images.

Even with all that horsepower, the Phaser Jet is more Clydesdale than thoroughbred. Because it applies ink one line at a time, it takes

about 2 minutes to print a page of graphics—twice as long as most thermals require.

The Phaser Jet switches automatically among parallel, serial, and AppleTalk ports—a boon for networks that tie PCs and Macs together. A built-in SCSI port lets you hook up a hard disk for storing bushels of fonts; a 200-sheet paper tray and a one-year warranty round out the package.

The Plain Truth

At \$9995, the Phaser Jet may be too rich for most users' blood. But as more plain-paper color printers appear later this year, prices are certain to drop. If you're looking to bring color document production in-house, the PXi could be just what the doctor ordered. ●

Daniel Tynan is an associate editor for PC World.

SNAPSHOT

Tektronix Phaser Jet PXi

The Phaser Jet prints up to 16 million colors at 300 dpi on virtually any kind of paper.

KEY FEATURES

- Costs 25 cents per full-color page
- Adobe PostScript Level 2 and HP-GL modes
- Powerful RISC chip for fast page processing
- Handles paper sizes up to 12 by 18 inches

AVAILABILITY

Immediate

PRICING

\$9995

Tektronix Inc.

GPID
P.O. Box 1000, MS
63-630
Wilsonville, OR 97070
800/835-6100,
503/685-3408 (fax)

Reader service no. 673

Out of the prairie comes proof that a higher level of communication has arrived.



Presenting the New Version of PROCOMM PLUS.

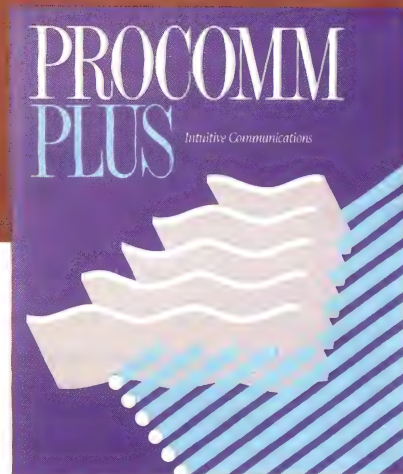
Leaving a very big impression on the field of communications is what PROCOMM PLUS has always done best. But today, it's done one better.

PROCOMM PLUS 2.0. The new version of the best-selling communications software in the world. With internal Zmodem, an enhanced ASPECT script language with hundreds of new commands, and script compiling for much faster execution speed; an enhanced dialing directory with many new features; a time-saving Filename Clipboard (Patent Applied For); 33 terminal emulations with 132 column and full EGA/VGA support; and much more.

If you own PROCOMM PLUS, you can upgrade to PROCOMM PLUS 2.0 for just \$39.00 by calling toll-free 1-800-333-4559. So call today. You'll get computer communication in its highest form. For a very down-to-earth price.

See your dealer today for PROCOMM PLUS 2.0. Current PROCOMM PLUS users: call 1-800-333-4559 now to upgrade.

Circle 280 on reader service card

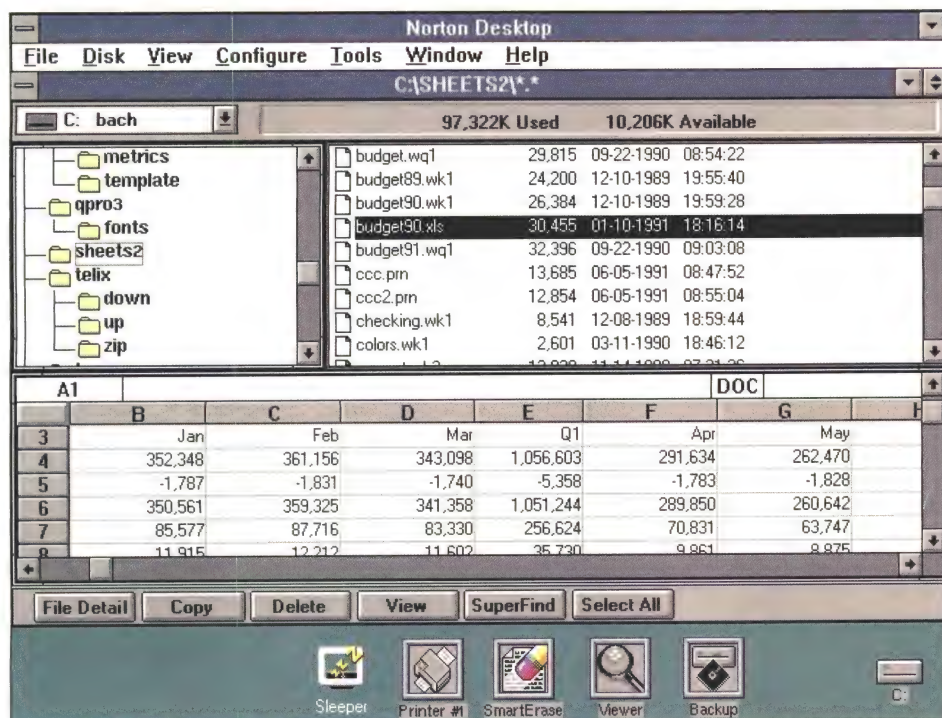


DATASTORM
DATASTORM TECHNOLOGIES, INC.

P.O. Box 1471 • Columbia, MO 65205 • 314.443.3282

A New Desktop for Windows

Not just another Windows shell, Norton Desktop for Windows adds a bundle of useful disk utilities.



Norton Desktop for Windows' file manager includes a superb file viewer. Icons give access to a screen blanker (Sleep) and disk utilities. To print a file, simply drag it onto the Printer icon.

John Walkenbach

Norton Desktop for Windows isn't the first attempt to improve upon Windows' adolescent file and application management skills—hDC's *FirstApps*, Wilson WindowWare's *Command Post*, and Publishing Technologies' *CBM Desktop Office* address various parts of the problem. But Symantec's solution appears to be the most complete, replacing both the File Manager and Program Manager. And Norton Desktop doesn't stop there—for \$149, you also get a blockbuster collection of 18 Windows utilities, including a backup package, a batch language, and Windows versions of Disk Doctor and File Finder.

Drag Till You Drop

Managing applications is distinctly Macintosh-like: You can drag and drop icons to perform common tasks such as printing, deleting, and viewing. The menu system is customizable, and you can hot key between applications.

Norton Desktop lets you nest program groups inside icons, which helps reduce screen clutter and organize applications. For example, you could set up *Excel* so that you click once on the *Excel* icon to display the icons for other *Excel* modules or particular worksheets. The nesting can be independent of your directory structure, so you could set up a Budget icon with subicons for different programs.

The program smoothly in-

tegrates file tasks with application management. Besides the usual filing tools, you get a superb *Magellan*-like viewer. You can select all similar files on a drive, regardless of directory, making it easy to delete all BAK files, for example.

Another highlight is *Norton Backup for Windows* (available separately for \$129). Like the new Windows-based backup in *PC Tools 7.0*, the utility lets you back up while you're working in another application. (See "Product Outlook," August 1991, for a closer look at *Norton Backup for Windows*.)

This isn't a complete Windows version of *The Norton Utilities*, but you get the most popular tools. The Disk Doctor lets you diagnose problems

in Windows, but to fix them you must exit to DOS, where you'll also find Unerase, Unformat, and the Speedisk defragmenter. Back in Windows, the Smart Unerase program intercepts delete requests and moves the files to a hidden directory for possible retrieval later, and the Shredder takes files where no unerase can go.

Want more? The Batch Builder is a programming language that lets you create batch files, custom menus, and dialog boxes. You also get a screen blanker, a pair of calculators, and a slick icon editor.

While the upcoming Windows 3.1 will improve the File Manager, it won't surpass Symantec's offering. Norton Desktop adds a new spark to Windows. ☺

John Walkenbach is a contributing editor for PC World.

SNAPSHOT

Norton Desktop for Windows 1.0

WINDOWS A slick replacement for the Program Manager and File Manager, Norton Desktop also delivers a bundle of handy disk and backup utilities.

KEY FEATURES

- Drag-and-drop program and file management
- Includes Norton Backup for Windows
- Batch language
- Disk Doctor and other utilities

AVAILABILITY

Immediate

PRICING

\$149

Symantec Corp.
10201 Torre Ave.
Cupertino, CA
95014-2132
800/441-7234

Reader service no. 676

The best way to improve your writing just got better!

Introducing RightWriter® for Windows™!

In today's competitive environment, good writing is good business. Good writing means profits for your organization, satisfaction for your customers, and advancement for your career. Now, with the new RightWriter for Windows, there's no better way to improve your writing.

The most powerful way to improve your writing!

RightWriter for Windows is a powerful expert system that applies more than 6,000 rules of good writing to your documents. With just a few clicks of your mouse, RightWriter checks your word processing documents for thousands of potential writing errors—in grammar, style, word usage, punctuation, and more!

RightWriter also rates your documents for readability and strength. These summary indexes help you target your writing to specific audiences. The result is powerful, effective writing.

The fastest way to improve your writing!

RightWriter for Windows is so easy to use. The new interactive checking

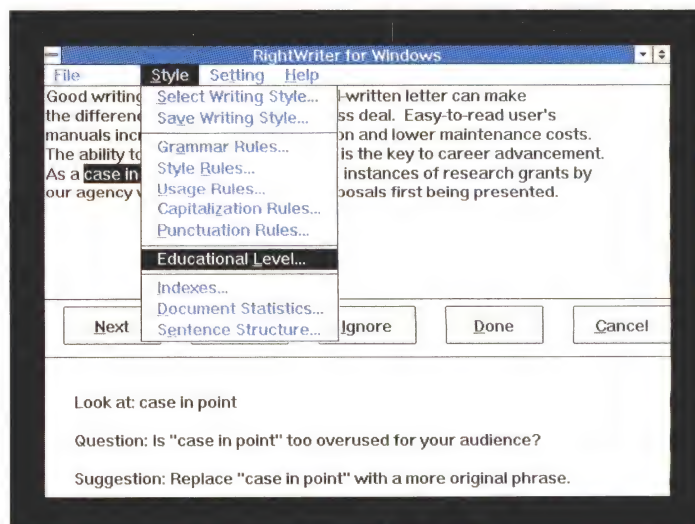
mode proofreads your documents just like a spell checker, offering real-time suggestions to improve your writing. Now you can add immediate impact to your writing with the click of a mouse button!

Plus, you can select from a variety of options to customize your analyses or create an unlimited number of writing styles to apply to your documents. Best of all, RightWriter for Windows works with major Windows word processors including Ami Professional®, Legacy®, Microsoft® Windows Write, Microsoft Word for Windows,

and the new WordPerfect® for Windows. RightWriter can also use the Windows clipboard to check text from any Windows program!

The best way to improve your writing!

Independent tests confirm that RightWriter catches significantly more errors than either Grammatik™ or Correct Grammar™—on all platforms. These studies also prove that RightWriter's accuracy rate is significantly higher than competing products. As Computer Reseller News recently confirmed:



"The issue that matters most is the program's accuracy and intelligence. And in that area, RightWriter stood clearly above the rest." February 18, 1991

Whatever the version, whatever the platform, the industry recognizes RightWriter as the best grammar and style checker on the market. Recent tributes to RightWriter's effectiveness include:



Write better! Write faster! Right now—Guaranteed!

RightWriter for Windows will improve your writing in 30 days—or your money back. Purchase RightWriter for Windows and you'll also receive a FREE copy of Strunk & White's *The Elements of Style*, the book that set the standard for good writing.

Don't wait another day to put RightWriter to work for you. More than 400,000 users are already improving their writing with RightWriter. You can too.

See Your Local Dealer or Call Today!

800-992-0244

ext. RW50

Versions of RightWriter are also available for DOS, the Macintosh®, UNIX®, DeskMate®, and networked environments. For more information, see your local dealer or call Que Software at 800-992-0244 or 317/573-2500.

QUE
software

Suggested
Retail
Price

\$99⁹⁵

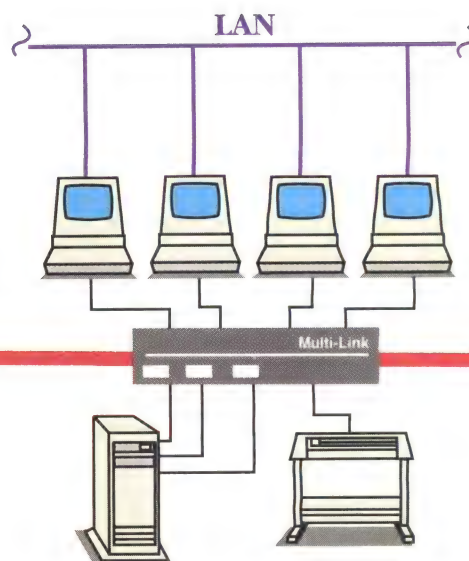
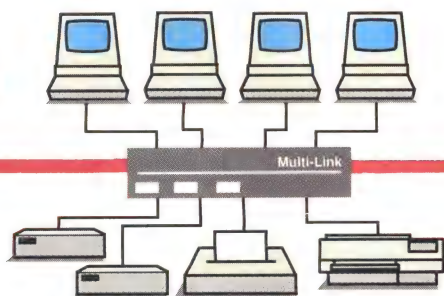
**Grammar &
Style Checker
for Windows**

QUE
software

**WRITE BETTER!
WRITE FASTER!
RIGHT NOW!**

RightWriter is a registered trademark of Que Corporation, a division of Macmillan Computer Publishing. Grammarik is a trademark of Wang Laboratories. Correct Grammar is a trademark of Writing Tools Group. Other products mentioned are trademarks or registered trademarks of their respective companies. Copyright© 1991 Que Corporation.

Circle 170 on reader service card



ANY DEVICE AT YOUR FINGERTIPS!

A New, Expandable, Any-Port-To-Any-Port Data Sharing System

Now from Western Telematic, the leader in peripheral sharing, comes an easy, cost-effective way to access any peripheral, any time right from your computer screen. Introducing LASERNET® Multi-Link™ — an expandable, **12-port** any-to-any data sharing system for high-speed printer and data sharing.

With Multi-Link, share any device with any device, transfer files between PCs and conduct modem or FAX pooling. And do it over distances of up to 4,000 feet using inexpensive twisted-pair wire!

Flexible, Expandable and Windows® Compatible

Each high-speed port, **8 serial or 4 parallel**, can be designated for PCs, printers, plotters, modems, or any RS-232 device. Multi-Link features up to 4MB, field-expandable SIMM memory and a convenient data-link port, which

enables the linking of up to 32 Multi-Link devices. That gives you 384 ports! And peripheral access is at your fingertips with our MS-DOS® or Windows® 3.0-compatible device-select menu.

Increased LAN Efficiency

If you have a LAN, Multi-Link can off-load printing functions for increased efficiency. Now LAN and non-LAN PCs can have access to all office peripheral resources — all for less than \$67 per port!

Set-up Ease and Convenience

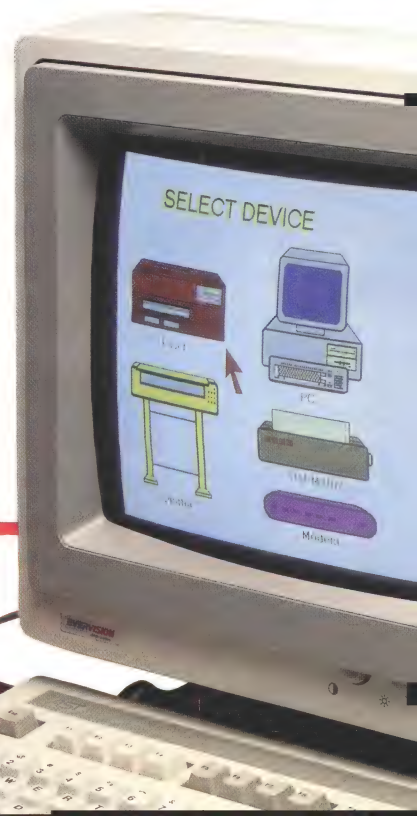
An entire system can be configured from one PC. And serial cabling is made practical with telephone-style, snap-in connectors. Parallel ports accept standard PC-to-printer cables.

Multi-Link is compatible with popular word processing, spreadsheet and high-level graphics software, and supports all dot-matrix and laser printers including, HP® and PostScript® printers. Prices start at just **\$795** for 256KB memory.

Full Service and Support

Multi-Link is made in the U.S.A., backed by a full **three-year** limited warranty with pre- and post sale technical support. So to get your fingertips on a Multi-Link, call WTI toll free at **1-800-854-7226**, FAX 714-583-9514 or write Western Telematic, 5 Sterling Irvine, CA 92718.

wte **western telematic inc.**
Making good connections.™



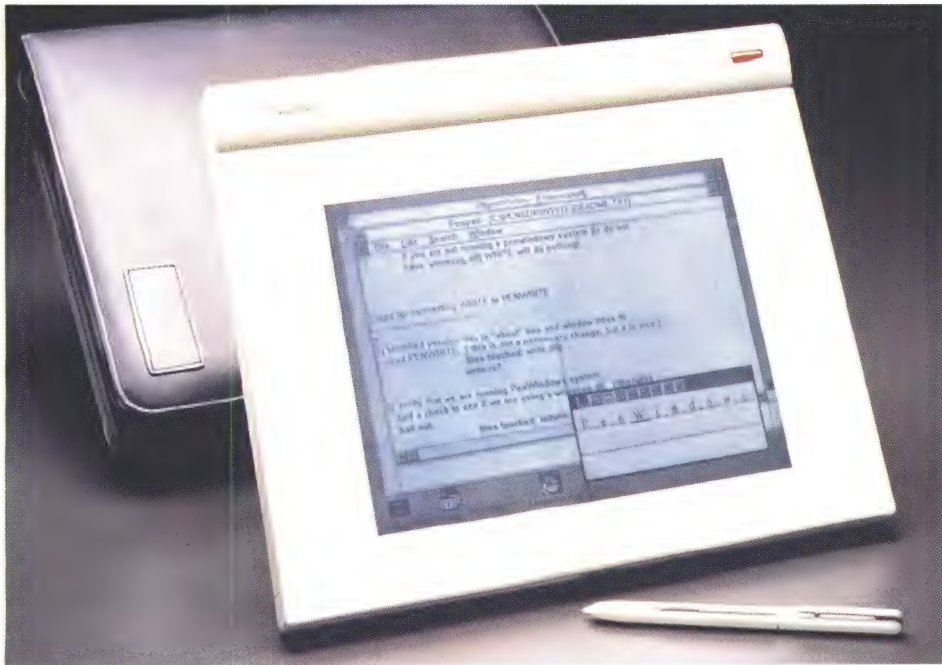
VISIT US AT COMDEX, BOOTH #796

© Copyright- 1991 Western Telematic Inc. All rights reserved.
LASERNET is a registered trademark and Multi-Link, Western Telematic and WTI Logo are trademarks of Western Telematic Inc. All others are registered trademarks of their respective companies.

Circle 325 on reader service card

NCR Gestures to the Future

You can walk and do Windows at the same time with this powerful prototype for pen-based computing.



NCR's 3125 Notepad is the first announced system designed from the pen up to run Microsoft's Windows for Pen Computing and Go's PenPoint.

Russell Glitman

The 3125 Notepad is the type of clipboard computer that will be commonplace in the future: flat panel display, no mouse, durable, built-in stylus, and optional keyboard. If you want a head start, get one now. But be warned: Time travel is for the adventurous and well-heeled.

NCR is bringing out the first of a new breed of pen-based computers that will range in size from desktop to palmtop. The 3125, available now, is aimed straight at users who lack a viable computer for their business needs.

The problem with a machine of the future, however, is there's very little software of the future today. Two advanced operating systems that will run on this machine—Go Corporation's elegant 32-bit

PenPoint and Microsoft's Windows for Pen Computing—aren't beyond beta versions yet. These will be available on the unit, which comes with DOS 5.0 and PenOS—an NCR-developed operating system that lets mouse-aware applications use a pen as an input device. Windows applications will run on the 3125 when Microsoft's operating system is released.

Working in Stylus

Standing 1 inch tall, this 9.8-by-11.7-inch machine is no harder to hold than a clipboard, except it weighs 3.9 pounds. Using a pen instead of a mouse simplifies navigation—you just put the stylus on the menu item you want and tap. The plastic-tipped stylus also lets you gesture to delete, copy, and move text, graphics, and files.

The 16-shade VGA screen is easy to read and to write on. NCR's trainable character recognition software correctly translated what I wrote—most of the time. (NCR claims a remarkable 98 percent success rate.) Both operating systems offer a pop-up key layout to minimize those painful moments when recognition fails.

The machine is based on the power-saving 20-MHz 386SL chip, and comes with 2MB RAM and 2MB of flash memory (nonvolatile program-mable memory that you dedicate to applications). It costs from \$4600 to \$6740 depending on your mix of the three types of available storage: a 20MB hard disk, up to 4MB on-board RAM and flash memory, and removable RAM cards and flash memory in 2MB and 4MB.

The 3125 is built to with-

stand 50 g's—the impact of a fall from desktop to floor—and it's water resistant. You can count on 4 to 6 hours of battery life, depending on how you use the power management features. Battery recharge time is 5 hours with the unit on, 1.2 hours with it off. You can connect a keyboard and other peripherals through a 180-pin connector. A 9600-baud fax/2400-baud data modem is optional.

This early-release hardware will let managers check out productivity gains for pen-based systems. That may give them easier arguments for volume orders once pen optimized applications are available in early 1992, and the future arrives. ☉

Russell Glitman is executive editor of PC World.

SNAPSHOT

3125 Notepad

The featherweight 3125 is the first of a new breed of pen-based notebooks for mobile workers who previously had no practical computer option.

KEY FEATURES

- **Runs PenPoint and Windows for Pen Computing**
- **NCR-developed handwriting recognition software**
- **3.9 pounds (3.95 pounds with 20MB hard drive)**
- **4- to 6-hour battery life**

AVAILABILITY

October (limited quantities now)

PRICING

\$4600 to \$6740

NCR Corp.

1700 South Patterson Blvd.
Dayton, Ohio 45479
513/445-5000

Reader service no. 674

Déjà Vu

THE NEW COMPAQ DESKPRO 486/50L.

Seems we've been here before. Once again, the most powerful PC you can buy—in fact, the most powerful in existence—comes from Compaq.

The new COMPAQ DESKPRO 486/50L Personal Computer has everything for the most voracious power users, and for intensely

demanding networks. It has Intel's fastest, most powerful microprocessor—the 50-MHz 486 (more than 50% faster than the 33-MHz 486). A second-level cache so big (256 Kbytes) that 99% of the time, the data you need will be instantly accessible. A more-than-generous 8 megabytes standard RAM. Superfast 12-ms

fixed disk drives for superfast access to stored data. Advanced VGA graphics. Plus a full complement of EISA 32-bit bus master expansion slots. It's COMPAQ FLEX Architecture at its finest, providing the speed and performance that power users crave.

Who's it for? Designers and engineers longing to stretch CAD/CAE to its limits. Software developers who want compilation

room.



without limitation. Scientists who seek accelerated analysis. Anyone who wants to push Windows wide open and watch graphics-based applications fly.

What's good for one power user is also ideal for a group. Exceptional processing speed, expandability, and practically limitless storage (more than 20 GB) make it an extraordinary network server and multiuser host.

But doing something this new and exciting isn't new to us. Compaq has a history of building the top-performing PCs in their class. With the highest standards of reliability (to save you money) and compatibility (to save you headaches). And outstanding support.

The Compaq Customer Support Center at 1-800-345-1518 puts you in touch with Compaq technical experts who can

complement your dealer's know-how.

For details and the location of your nearest Authorized COMPAQ Computer Dealer, call 1-800-231-0900, Operator 164. In Canada, 1-800-263-5868, Operator 164.

COMPAQ

It simply works better.



MICROSOFT PROJECT FOR WINDOWS.
IN AN INDEPENDENT STUDY,* IT TOOK 50% LONGER TO
COMPLETE A PROJECT THAN CA-SUPERPROJECT.



CA-SUPERPROJECT.
WITH MORE EFFICIENT SCHEDULING ALGORITHMS, IT HELPS
YOU BRING PROJECTS IN ON TIME AND ON BUDGET.

Identical Project. Different Project Manager. Can You Spot The Difference?

Efficiency. Accuracy. Dependability.

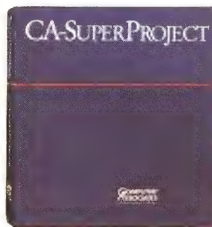
Required skills for any project manager. But not as common as you'd think. In a recent independent study of the five leading project managers—all scheduling the same project—the completion dates varied by as much as five months.



*CAS Computing
Architecture For
The 90s Protects
Your Investment*

CA-SuperProject® finished first in 214 working days. Microsoft® Project finished last in 323 working days.

That's why serious project managers trust CA-SuperProject. It offers more efficient scheduling algorithms, better manage-



ment of resources and gives you completion dates you can bet your career on. It's also incredibly easy to use. You can create projects in minutes.

And with a few clicks of the mouse, you'll have presentation quality Gantt, PERT, Cost/Resource and Work Breakdown charts.

So call 1-800-645-3003 today to find out the location of your nearest dealer. Because once you've worked

with the most-efficient project manager, the difference will be obvious.



© 1991 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787. All trade names referenced are the trademarks or registered trademarks of their respective companies.
* March 1991 study published by ISoft Decision, Inc., including CA-SuperProject 2.0, Microsoft Project For Windows, Symantec's Timeline 4.0, ABT Project Workbench and Scitor's Project Scheduler-5.

Circle 39 on reader service card

PRODUCT OUTLOOK

Edited by MIKE HOGAN

WinPrinter 400

Windows and TrueImage Cut Printing Overhead



Programming tricks available through Microsoft's TrueImage interpreter let this 4-ppm laser harness your computer's CPU and memory to give you inexpensive PostScript printing.

Looking for a PostScript laser to use with *Windows*? You may already own half of it. LaserMaster's new WinPrinter 400 uses the muscle of your 386 or 486 computer—the RAM and processor you've already paid for—to give you crisp 400-dpi PostScript printing for a low \$1995.

The WinPrinter's 4-ppm "dumb" engine connects to a LaserMaster video interface card mounted in your PC. The smarts are in LaserMaster's version of the Microsoft TrueImage PostScript-compatible interpreter, which runs in the background under *Windows*. You print from your application as you normally would, even from DOS applications.

The bundle includes 50 Adobe-specified Type 1-compatible fonts, which work with *Adobe Type Manager for Windows* for crisply scaled

type on screen as well. You can easily switch resolution between 300-dpi LaserJet emulation and 400-dpi printing.

Although software-based PostScript interpreters aren't famous for speed and convenience, LaserMaster claims WinPrinter can run about twice as fast as an Apple

LaserWriter II NTX with an AppleTalk (not the slower serial) connection. To achieve that speed, though, you'll want at least 4MB of RAM on a 386 and, for the best performance, a 387 math coprocessor.

LaserMaster exploits the opportunities in *Windows*' 386-enhanced operating mode to gain printing speed while smoothly sharing the 386 CPU with your applications.

WinPrinter can't be shared easily between two or more computers, since it relies on its umbilical arrangement with the software and video interface in the host PC. On the plus side, it does away with concerns about downloading fonts, since any font installed for the WinPrinter software is always ready to print. And if you upgrade to a faster computer, your WinPrinter will speed up too. —Bob Weibel

IN BRIEF

WinPrinter 400

WINDOWS This 400-dpi PostScript printer saves you money by tapping the processing power of your 386 or 486 computer.

LaserMaster Corp.

TurboRes Printer Division
6900 Shady Oak Rd.
Eden Prairie, MN 55344
612/944-8286,
612/944-0522 (fax)

Reader service no. 640

INSIDE PRODUCT OUTLOOK

126 MastersPorts, SupersPorts Zenith lineup breaks new ground with the very latest in laptop technology.

128 Hollywood IBM's boffo presentation graphics package for *Windows* users.

128 OmniLink/Laser A low-cost device forwards faxes to your laser printer so you can read them on plain paper and doubles as an external fax-modem.

137 Image-In-Color A *Windows*-based scanner utility to polish and fine-tune images.

137 Peachtree Complete Network Accounting, Client Write-Up A LAN version of an old favorite, and a *Windows*-based add-on to help accountants review client books.

138 Publish It 2.0 DTP upgrade boasts better memory management and text flow plus new soft fonts.

138 SpeedModem Champ If you can forgo V.32 error checking, here's a 9600-baud modem at a rock-bottom price.

140 ProKey for Windows An intelligent macro recorder and script editor for automating *Windows* chores.

142 MicroPorte 1042 A pocket-sized modem with high speed and accuracy for critical transmissions on the road.

MastersPorts, SupersPorts

Suite of Zeniths on the Cutting Edge

Once the nimblest of laptop purveyors, Zenith Data Systems is trying to regain past glory with a laptop collection that presses all the new buttons in technology.

First up is the MastersPort 386SL, which employs Intel's new power-saving 386SL microprocessor to change the way we use laptops. Like most in its weight class, the MastersPort 386SL turns off screen and drives to stretch the life of its rather typical 3-hour nickel-cadmium battery. But it's the first with a rest/resume mode that turns the CPU clock down to zero MHz and turns off all components except memory and keyboard refresh—drawing about as much power as a keyboard LED. You can hop in and out of your application—even a protected-mode *Windows* application—without ever rebooting and so stretch those 3 hours of battery life over an entire day.

As notebooks go, the \$4999 MastersPort 386SL is a little wide and a little high-end. Its 8.3-by-12.4-by-1.8-inch dimensions permit a full-sized, full-travel, 82-key keyboard. Other vital statistics: 6.8 pounds, 2MB of RAM (expandable to 8MB), a 64K cache, a 1.44MB floppy, and a 60MB hard drive.

If you're looking for something cheaper that fits sideways into half your briefcase, you can choose from a 20-MHz MastersPort 386SX for \$3999 or the 12-MHz MastersPort 286 for \$2699. Both weigh 6.6 pounds and measure 8.5 by 11 by 2 inches. The keyboards are scrunched a little to fit that 11-inch dimension and they have emulated page-control keys. The 386SX ships with 2MB of RAM and a 60MB hard drive, the 286 with 1MB of RAM and a 30MB hard drive. All three

notebooks sport a 9-inch diagonal black-on-white VGA screen.

Zenith's SupersPort 486 is the first 486 laptop (25 MHz), while the SupersPort 486SX is the first laptop to exploit Intel's new 20-MHz 486SX chip. Both, remarkably enough, run

IN BRIEF

MastersPorts, SupersPorts

Zenith's line-up takes early advantage of new processor technology to deliver a laptop for every user.

Zenith Data Systems
2150 E. Lake Cook Rd.
Buffalo Grove, IL 60089
800/553-0331

Reader service no. 644



Zenith takes advantage of Intel's 386SX, 386SL, and 20-MHz and 25-MHz 486 engines to provide no-compromise laptop alternatives.

on batteries for up to 3 hours.

Both 486 units have 12-by-15-by-3-inch cabinets made of magnesium rather than plastic for better heat dissipation and strength. At 10.7 inches, their VGA screens are oversized, and the detachable

keyboards come with the Iso-point mouse-equivalent for *Windows* use. With 4MB of RAM (expandable to 16MB) and 120MB hard drives, both offer no-compromise, go-anywhere computing. —Mike Hogan

@Mail

Integrated Mail as Easy as 1-2-3

Spreadsheets and electronic mail are mainstays of productivity at millions of offices. *@Mail* smoothly integrates 1-2-3 and E-mail, letting you share worksheets with colleagues without leaving your spreadsheet environment.

Once installed, this 1-2-3 add-in works from the familiar Lotus menu. You get all the standard E-mail features and can send messages up to 32K in length, attach 64 binary files, automatically keep copies of all messages sent, save an uncompleted message as a draft, automatically add addresses from incoming messages to the address book, and exploit a host of other nice touches that can aid a mail-oriented work group.

But the real payoff is *@Mail's* attention to spread-

sheet detail. You can quickly attach a worksheet you've just completed to an *@Mail* message by typing 'current' in the Attachments field; you don't have to worry about the spreadsheet's exact title and location. The worksheet arrives in your co-workers' mailboxes with all formulas and macros intact, and recipients can launch 1-2-3 from the worksheet. Or, you can highlight a range and paste it into a message. Most strikingly, you can combine *@Mail* with macros to dispatch messages automatically when a specified value appears in a worksheet—for example, to signal an alert when inventory falls below a crucial level.

@Mail requires 120K of memory and works with 1-2-3 2.x and *Symphony* 1.x and 2.x.

The initial version requires MHS messaging support on the back end (either a network or personal copy of MHS software). *@Mail* talks to native MHS network packages such as *Dc Vinci eMail* and, through gateways, to *cc:Mail*, *Microsoft Mail for Networks*, *MCI Mail*, and other systems. A starter kit costs \$129.95; you can add a single network user for \$79.95 or buy an eight-user pack for \$395. —Eric Bender

IN BRIEF

@Mail

This 1-2-3 add-in delivers E-mail talents designed to help spreadsheet users work together.

Beyond Inc.

38 Sidney Street
Cambridge, MA 02139
800/845-8511,
617/621-0096 (fax)

Reader service no. 639

**AW...
WHAT
THE
HECK!**

**Let's see
the other
guys beat
this Price!**

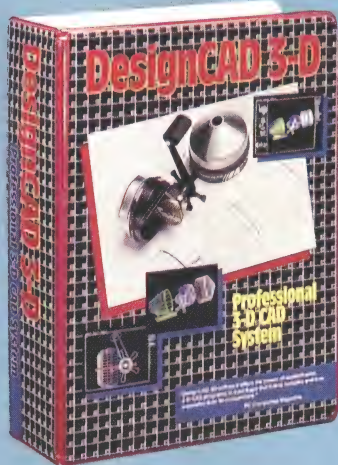


December 11, 1990
DesignCAD 3.0, Version 3.1

**If there ever was a CAD
program out to prove
that AutoCAD, CADKEY,
VersaCAD, and other
\$3000 programs are
overpriced,
it's DesignCAD!**

(MicroCAD News review)

DesignCAD 3D



\$399

We Added...

to DesignCAD 3D version 3.1:
A Basic-like programming
language entitled BasicCAD.
We added new commands.
We added hardware support
for dozens and dozens of new

devices. We made hundreds of overall internal enhancements! We improved the manuals, the packaging and the speed!

How much extra did we charge?

Nada. Nothing. Zip. No extra charge at all. Oh, sure...our accountant said we could increase the price. Our lawyer said there was no legal reason not to charge more. A minister said we had no moral obligation to keep the same price! So, why didn't we raise the price for DesignCAD 3D version 3.1? Because...in the Great American Tradition we said "Aw...What the Heck. Let's see the other guys beat this price!" DesignCAD 3D version 3.1 sells for \$399.

Does this include everything?

Yes. We include everything! The programming language, the hardware device drivers (more than 450), built-in shading capability, hidden line removal capability, solid-object modeling capability, translators to-and-from other file formats, are all included!

How can you afford to sell a program like this at such a low price?

This is our most often asked question. We have a simple answer. Volume. We sell thousands of these programs each month! If we were to charge thousands of dollars per copy (like our competitors) we would restrict our sales to the professional trades only. By lowering our price we sell to professional architects and engineers as well as the ordinary individual!

Many ordinary individuals purchase DesignCAD 3D for personal projects. Many people purchase DesignCAD 3D and perform CAD Drafting at nights and on weekends as a second job! People design "dream homes" and "widgets". The uses are limited only by YOUR imagination!

Remember - American Small Business Computers also sells a 2D version of DesignCAD. It costs only \$299! Write or call for FREE brochures that will help you determine which program best suits your need.



American

Small Business Computers, Inc.

327 South Mill Street • Pryor, Oklahoma 74361
(918) 825-4844 • FAX (918) 825-6359

Hollywood

Opening Windows Wider for Professional Presentations

With WYSIWYG displays that let you visualize your work, extended memory capabilities, tighter integration between packages, and advanced color support, *Windows 3.0* of-

IN BRIEF

Hollywood

WINDOWS IBM's *Windows* powerhouse brings a formidable collection of well-thought-out tools to the creation of business graphics presentations.

IBM Desktop Software

472 Wheelers Farms Rd.
Milford, CT 06460
800/426-7699

Reader service no. 642

fers a well-equipped studio for presentation graphics software. Among this year's bumper crop of *Windows* presentation packages, IBM's multitasking *Hollywood* stands to be a superstar.

The \$495 package helps you past the biggest hurdle in creating effective presentations—that first empty screen. *Hollywood* starts you off with professionally designed templates that include smooth layouts and a range of color combinations. You look at sample templates and pick one, modify it as you like, and create a master page for elements (such as a logo) that you want to place on every page.

Hollywood's slick integrated outliner then lets you

quickly create your presentation by entering text (or importing it). Everything you do in the outline is incorporated in the presentation (similarly, any change you make on a presentation page flows back to the outline). Your work is speeded by search and replace and a spelling checker. You can switch to a light-table-style view to see the sequence of pages you're creating.

The package offers a complete suite of presentation aids, starting with a highly customizable toolbox. A rich charting module lets you import 1-2-3 or *Excel* data and then view and pick from a host of chart types, including such bonuses as 3-D charts with adjustable depth. You'll also find

full-blown draw and paint features, along with a generous selection of clip art. *Hollywood* bundles in Bitstream Speedo on-the-fly font generation, with two font families; a text tool lets you achieve still glitzier effects. You can automatically spin off speaker notes and handout pages. Additionally, *Hollywood* lets you create screen shows with artful special effects, and you don't need the package to run them on other *Windows* PCs.

Hollywood is eager to work with outside talent; it imports 11 graphics formats and comes with a communication package that permits overnight delivery of slides from the Magi-Corp service. Like other stars, it doesn't accept cheap accommodations—you'll want a 386 with at least 4MB of memory and more than 8MB free on the hard disk. —Eric Bender

OmniLink/Laser

Fax Output You Can Live With

The output from most thermal fax machines is so shoddy, many users photocopy their thin, curling faxes so they can read them on plain paper. While you can buy fax machines that provide a high-quality plain paper option, they usually cost much more than standard fax machines.

Technology Concepts solves the puzzle with OmniLink/Laser—a device that sits between any standard fax machine and any LaserJet-compatible laser printer. Not only can it forward fax machine output to the high-quality printer; a low-cost option lets you attach it to a PC to act as an external fax-modem.

It's similar to Hewlett-Packard's LaserJet Fax, but at \$499, OmniLink/Laser costs less than one-third as much as HP's product. Still, it doesn't

offer the LaserJet Fax's send capability unless you buy the PC option, and it receives at a standard 200-dots-per-inch (dpi) resolution instead of the finer 300-dpi resolution you get when HP LaserJet Faxes communicate at both ends.

You can take the fax machine out of the loop and set up the OmniLink/Laser to receive faxes directly over a separate phone line; that way, callers get through more easily. If the printer is in use, incoming faxes wait in line in the OmniLink/Laser—you get 30 pages of memory (512K), but you can upgrade to 60 pages (1MB) for \$129.



This group III fax lets you use your own HP-compatible laser printer for high-quality fax output at a good price.

IN BRIEF

OmniLink/Laser

This device lets you use your laser printer to print faxes on plain paper. Add an optional PC connection, and you've got an external fax-modem unit.

Technology Concepts

1159 Triton Dr.
Foster City, CA 94404
800/852-6881,
415/578-0892 (fax)

Reader service no. 646

With the separate \$129 fax-modem option for your PC, you can use the OmniLink to send faxes right off your computer screen. The unit also includes a Hayes-compatible 2400-baud modem with communications software. Advantages over a fax board: You save a slot, and you get true background faxing—you can turn off your PC at night and still get the fax. —Eric Brown

A few expert opinions:

"There's a new king of the hill—the ZEOS Notebook..." — PC Magazine, Editor's Choice

"ZEOS' Notebook...it's the one to buy..." — PC World, Best Buy

"The ZEOS Notebook...a clear winner...why settle for less?" — Byte

"This notebook is a steal." — InfoWorld

"The ZEOS beats the Compaq." — PC Computing

"The ZEOS Notebook...delivers astonishing

value...sensational." — Portable Office

"Outstanding value." — PC Week

Outstanding Indeed!

And The Price?

t and
ded.

Either way, you're sure to appreciate our light weight snap-in, snap-out battery packs. They're so light and easy to use, you can easily take an extra one with you on those really long trips. You can get even more life out of a single charge by using our programmable power management system. Hour upon hour of Notebook computing power!

CONNECTIVITY TOO!

Your new ZEOS notebook is a great connectivity tool. Utilizing our optional built-in 2400 baud MNP Class 5 modem,

connectivity buffs will find themselves logging on at every turn. And speaking of connectivity, we've kept the I/O easy to use too. Because unlike many of the others, your new ZEOS notebook has the same industry standard port connectors you'll find on your larger desktop system. Completely compatible! Serial and Parallel ports; even an external VGA connector. All industry standard and ready to go the minute you receive your system.

It's attention to detail that makes the difference. Tens of thousands of hours of development time have been invested. We've been thinking and re-thinking exactly what you want in a notebook, and now we're building it for you. We think you'll agree, it's an incredible product. Plus, your new notebook is backed by the best support in the industry, 24 Hours a Day.

ZEOS 24 HOUR A DAY SUPPORT.

After all, it was ZEOS that invented 24 Hour a Day Toll Free Sales and Technical Support. We're always here to help. Any time you need us your telephone is a Toll Free Hotline—direct to your own personal Technician. 24 Hours a Day, 365 Days a Year.

Now that's ZEOS value. But we don't stop there either.

Your new notebook is also backed by our 30 Day Absolute Satisfaction Money Back Guarantee and One Full Year Limited Warranty. You're going to be very satisfied. We don't just say it. *We Guarantee It.*

ORDER YOUR OWN ZEOS NOTEBOOK NOW!

You can order your new ZEOS notebook *right now*. Simply pick up the phone and give us a call at 800-423-5891. And don't forget the extra goodies. Like larger hard drives, carrying cases, and extra batteries. All these are available now in money saving packages. You're going to love your ZEOS notebook. That's a guarantee!

**ORDER NOW TOLL FREE:
800-423-5891**

take desktop
ver anywhere!
EOS Notebook.



**NOW. YOUR COMPLETE
'286 NOTEBOOK! VGA,
20MB HARD DRIVE, 1.44MB
FLOPPY AND MORE. LIGHT
AND LOADED! INCREDIBLE**

**ONLY \$1995
386SX ONLY \$2295!**


- '286-12 or '386SX-16 CPU.
- 1MB DRAM, expandable to 3 or 5MB.
- 20MB High Speed HDD.
- Built in High Density 3.5" 1.44MB floppy drive.
- High Resolution VGA display. Fluorescent backlit 640x480, 32 grey scales. Bright and clear.
- Removable quick charge NiCad battery. Two hour plus battery life typical, more using Programmable Power Management!
- Quick charge or trickle charge using included AC power adapter.
- Extra battery packs and external charging stand available.
- 82 key keyboard. True 101 key emulation.
- Industry standard Serial and Parallel Ports.
- VGA port for external VGA color display. Great for demos.
- Total system weight under seven pounds with battery!
- 30 Day Absolute Satisfaction Money Back Guarantee and ZEOS Customer Satisfaction Package.
- One Full Year Limited Warranty
- 24 Hour a Day Toll Free Technical Support, 365 Days a Year.


**ORDER NOW TOLL FREE:
800-423-5891**

FAX Orders: 612-633-1325
Minnesota: 612-633-4591
Hearing Impaired (TDD)
Orders: 800-228-5389
Outside US and Canada:
612-633-6131
MasterCard, VISA, Discover,
Am Exp, Z-CARD.
Open 24 Hours a Day,
365 Days a year!





The ZEOS Guide to the Perfect Notebook:


 **PROCESSOR:** PC Magazine recommends a '286 or '386SX processor pointing out that "8086- and 8088-based portables have only half to a third of the computing power of a 286." That's why ZEOS offers you your choice, '286 or 386SX! More power for you. After all it's just like a 6.5 pound desktop!

 **DRIVES:** *Two drives, built in!* A whisper quiet high speed 20 Megabyte hard disk *plus* a 1.44 Megabyte 3.5 inch floppy. Remember, with a built in floppy drive you don't need to fool around with strange interfaces to load and transfer files.

 **VIDEO:** ZEOS raises the ante to VGA! We're talking about bright and crisp VGA displayed on one of the largest notebook screens in the industry. The display also features advanced fluorescent backlighting, 32 grey scales and 640 x 480 resolution. Plus, it can be adjusted to any position over a 135° angle and features easily adjustable brightness and contrast controls. Easy viewing under virtually any lighting conditions. You can connect to an external VGA color monitor too!

 **GREAT BATTERY FEATURES:** Every battery feature you want. You can plug your notebook in and "quick charge" the battery in less than one hour or you can "trickle charge" while in use. Plus, your battery easily snaps out allowing the quick installation of an optional replacement battery. It's great to be able to carry a light weight spare for those especially long trips. An optional battery charger stand is available as well.


 **INTELLIGENT POWER MANAGEMENT:** Your new ZEOS notebook features an intelligent programmable power management system if you wish to use it. Based on the length of time since your last keystroke, you may reduce CPU speed, display screen backlighting etc. Full power is immediately restored at the stroke of any key. The system even knows *not* to use the power management system when you are operating on AC power!

 **SYSTEMS STATUS AT A GLANCE:** Yes, monitor eight key system components at a glance! We've equipped your new notebook with eight LED indicators which monitor disk access, keyboard functions and power status. There is even an audible alarm

which may be programmed to inform you of a low battery condition and to let you know if the cover is closed with the power on. Now that's one smart notebook!

 **DESKTOP KEYBOARD FEATURES:**

We're talking 82 full size keys with full 101-key emulation. And the keyboard isn't squeezed either. The distance between the "Q" key and the "[" (left bracket) key measures 7.5 inches, just as PC Magazine suggests. The keys are of standard size, plus touch typists will love our full 3.5mm keystroke. Type for hours and love it!

 **CONNECTIVITY AND I/O:** Keeping in touch is easy when you order our internal 2400 baud MNP Class 5 modem. Simply plug in the phone line and dial away. How about I/O ports? Many notebooks don't have them and if they do they're often non-standard. But your ZEOS notebook has *industry standard I/O*—serial, parallel and VGA. Just like your desktop!

 **FCC & UL APPROVALS:** Your new ZEOS notebook features both FCC Class B and UL approvals. We've also met CSA and VDE requirements too, just for good measure. Quality and reliability.

 **WATCH THE DETAILS TOO:** Like memory expandability. One Meg comes standard, you can also order a total of 3 or 5MB as a factory option. And lots of other details. Like a recessed power-on reset button, a soft carrying handle, built in speaker and more. You're going to love it! And there's no reason to wait.

CALL NOW TOLL-FREE:
800-423-5891

CHECK IT OUT!

Now, you can take desktop computing power anywhere! Your ZEOS notebook has many features of obvious importance. Also, there are a number of features that are subtle yet critical to your ultimate satisfaction. We'll go over them here one by one. We think you'll agree your new ZEOS Notebook is the one for you!

Your New ZEOS Notebook.
Take your pick!

As a '286
Only \$1995!

As a '386SX
Only \$2295!

'286 or '386SX, Hard Drive, Floppy Drive,
VGA, Under 7 lbs., Beautiful!

Unbelievable.
Believe It!

Call Now!
800-423-5891

10 Good Reasons To Buy From ZEOS®

Reason #1 "Overall Excellence."

As *PC Magazine* said "Price is always a consideration. So are benchmark test results. But both factors can be deceiving, which is why we consider them in the context of other aspects that will make the difference months and years down the road."

These are the attributes which *PC Magazine* used in awarding ZEOS the coveted Editor's Choice, not once but *seven* times. And "Overall Excellence" are the very words *PC Magazine* used in describing ZEOS systems comparing them to all others.

Reason #2 Dazzling Performance.

In one recent '386 review, *PC Magazine* awarded ZEOS Editor's Choice. "The ZEOS '386 blows away every other computer... a smart choice" is what they said. And in another recent review, *Government Computer News* said the ZEOS 33MHz '386 is "arguably the fastest MS-DOS and OS/2 micro in the world."

Dazzling Performance is built into every ZEOS system. It's a key component of ZEOS Overall Excellence.

Reason #3 Exceptional Quality.

PC Resource Magazine put it this way, "ZEOS... provides quality comparable with IBM or Compaq and does so for about 70% of the price." ZEOS uses only the very best components. And every system is fully tested and burned-in right in our own labs.

Reason #4 Value.

InfoWorld says, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent."

24 HOURS!
ZEOS is Open
24 Hours a Day,
365 Days a Year!
Toll Free!

Value: Excellent." *Personal Computing* said, "ZEOS... is the best value we've come across... its performance is right up there with the slickest, most expensive PCs you can buy."

Reason #5 Warranties and Guarantees.

ZEOS believes in its products. That's why we offer each and every customer our 30 Day Absolute Satisfaction Money Back Guarantee, no questions asked. Plus, our One Full Year Limited Warranty and Express Parts Replacement Policy. Optional On Site Service is available too. Call for details.

Reason #6 24 Hour Toll Free Technical and Sales Support.

At ZEOS, the customer is #1. That's why we invented 24 Hour a Day Tech Support. For *your* convenience. If you buy a product from us we feel we should be there to help, any time of the day or night. Give us a call Toll Free! 800-423-5891. Anytime!

Reason #7 Experience.

Almost unique in the mail order computer industry, ZEOS maintains its own chip level Research and Development staff. In addition to Systems Manufacturing, we also operate our own Board Level Manufacturing facility.

ZEOS has been involved in Research and Development since our incorporation back in 1981. Our strong and experienced Research, Manufacturing and Technical Staff translates into superior factory direct computer systems for you.

Reason #8 A Sterling Reputation.

In magazine after magazine and review after review ZEOS systems are cited for Overall Excellence, for Excellent Value, as the Right Choice and so on. All of this is flattering but the most important thing is this: What do our customers think? Frankly, they love us. The systems and the support. That means more to us than anything.

Reason #9 Easy to Buy.

ZEOS systems are easy to buy. You can pick up the phone any time of the day or night and order your new ZEOS computer. And we accept MasterCard, Visa, Discover, American Express, and Corporate Purchase Orders from Fortune 1000 Companies, Colleges, Universities and Governments. Complete Leasing Programs are available as well.

And now the Z•CARD! It's your very own ZEOS Credit Card and you can apply today. With the Z•CARD you can charge your ZEOS purchases and pay in easy monthly installments. It's just like a Bank Card. Why not apply for your Z•CARD now!

Reason #10 You're Going to be Very Satisfied.

When it comes right down to it, you're going to be very satisfied with your new ZEOS system. Our goal is your complete satisfaction. And that's our commitment to you. To quality. To performance. To reliability and support. To *Value*. We don't just say it, *we Guarantee it!*

FAX Orders Dial: 612-633-1325
In Minnesota Call: 612-633-4591
MasterCard, VISA,
Discover, AmEx,
Z•Card and COD
Open 24 Hours a
day, 365 Days
a year.

Order Now
Toll Free

800-423-5891





**"THE HOTTEST DEAL
ON THE NOTEBOOK
MARKET"**

**—PC MAGAZINE,
EDITOR'S CHOICE**

"King of the Hill... Sensational... The best price-performer... Astonishing value... A steal... The number one contender..." We couldn't have said it better ourselves. Winner of PC Magazine's Editor's Choice Award and PC World's Best Buy Award, the experts love the ZEOS Notebook. And you'll love it too. At only \$1995 for our '286 version and \$2295 for our new 386SX, you simply can't find a better notebook anywhere!

As PC Magazine said, the ZEOS Notebook "offers a top notch combination of power, weight, features and price..." And you can pick your power! Choose our '286 version or go for the incredible new ZEOS '386SX. Combine either with our high speed hard disk, built in 1.44MB floppy drive, VGA and more—you've got the greatest notebook going at any price!

INCREDIBLE DESKTOP FEATURES IN A NOTEBOOK.

In fact, it's really like owning a full featured desktop that you can take with you anywhere! Look closely at the details. Like our crisp 10" VGA display. The ultimate in sparkling clarity, it features advanced fluorescent backlighting for vivid VGA graphics. Then, the drives.

Two drives are better than one!

First, your notebook will include our whisper quiet high speed, high capacity hard disk. It will read and write your data so fast chances are you'll hardly know it's there. Then we're building in an industry standard 1.44 Megabyte 3.5 inch floppy as well.

While most notebooks don't include a floppy drive at all, you're really going to appreciate your ZEOS notebook's industry standard 3.5" floppy. It makes loading software and transferring files a breeze. Simply toss in your 1.44 and it's done. Anyway, can you imagine a desktop system without a floppy? We couldn't either. That's why your ZEOS notebook has one. It's great!

But the features of your incredible new ZEOS Notebook don't just stop there. Detail after detail we're giving you more than anyone else. Much more, for much less. Take a closer look.

DETAILS MAKE THE DIFFERENCE!

For instance, the battery system of your new notebook is the most advanced on the market. You can quick charge, or trickle charge, any time your system is plugged in. You can also take the battery out and use the optional charging stand if you wish.

Light Load

From

**Now, you can
computing power
The incredible**







ZEOS

ZEOS[®]

Simply the best
notebook you
can buy.

Take it from the experts:

Image-In-Color

Taking Image Enhancement to Photo Realism and Beyond



Image-In-Color's support for 24-bit color and image editing and retouching tools lets even the artless improve upon scanned-in photos.

The release of *Windows 3.0*, with its support for 24-bit color, increased by a millionfold boost over the colors available in previous versions. With a 24-bit display adapter you can dip into a palette of 16 million colors, more than enough to display photo-realistic images. *Windows*-based scanner utilities like *Image-In-Color* give you tools for image editing and retouching as well as color enhancement and separation.

Image-In-Color provides a full quiver of image-editing and color-enhancement tools, but its main strength lies in breadth of coverage, including text recognition and *auto-tracing*, the conversion of bit-mapped images to line art. The intent is to offer a practical, versatile scanner accessory rather than one based on darkroom image editing or other specialized features more likely to appeal to graphic arts professionals.

Color and gray-scale scanner controls are de rigueur, and the package lets you apply data compression and decompression while saving or retrieving your scanned or retouched images. You get a list-

ful of retouching tools—paintbrush, spray can, drawing pen, color fill, and convenient color palettes. Other tools let you focus your re-

touching or color enhancement efforts on a portion of an image. You'll find functions for resizing, cropping, and rotating images as well as filters for sharpening or softening an image or creating special effects.

But it's text recognition and auto-trace capabilities that set *Image-In-Color* apart. The program has text-scanning options not widely available.

Image-In-Color's auto-trace lets those with less artistic talent automatically outline a scanned-in image and then manipulate the outline's size and other characteristics with draw tools. You can even open and work on image files in Mac formats like PICT and MacPaint. You also can create overlapping selection (masking) areas or form a new selec-

tion area where the two intersect. One shortcoming is the lack of multiple clipboards (*Micrografx/Astral's Picture Publisher Plus* has nine).

While this \$795 program's minimum requirements include a 286-based PC with 2MB of memory, VGA, and *Windows 3.0*, you'll find your options limited without a 386SX-based machine, 4MB of memory, a large hard disk, and a mouse. —Bob Weibel

IN BRIEF

Image-In-Color

Image-In-Color mixes image editing with text recognition to provide a businesslike integrated scanner utility.

Image-In, Inc.

406 E. 79th St.
Minneapolis, MN 55420
800/345-3540,
612/888-3665 (fax)

Reader service no. 652

Peachtree Complete Network Accounting, Client Write-Up

Peachtree's Easy-to-Use Accountant Goes Multiuser

Peachtree Software's latest entry in its ongoing race with Dac Software to provide small businesses with full-featured but easy-to-use accounting is the long-awaited network version of *Peachtree Complete III*.

The all-in-one *Peachtree Complete Network Accounting* includes the full set of modules found in the stand-alone version—general ledger, accounts payable, accounts receivable, invoicing, purchase order, payroll, inventory, job cost, and fixed assets—as well as *Data Query II*, a separate package for querying the accounting data base and creating customized reports.

Peachtree Network Accounting requires DOS 3.1 or later and 640K of RAM. Servers should be equipped with a

hard disk and enough memory to support the network operating system. The program retails for \$695 and supports NetWare and *Lantastic*, as

well as other NETBIOS-compatible LANs.

Also new is a *Windows 3.0* package for accountants and bookkeepers. *Peachtree Client Write-Up* is a general ledger package designed to assist financial professionals in reviewing client books and preparing detailed financial statements.

Client Write-Up accepts information directly from both *Crystal Accounting* and *Peachtree Complete III*. It costs \$995 (for either stand-alone or network version) and comes with a 60-day money-back guarantee when it is purchased directly from Peachtree Software. Buyers will also receive a free copy of *Crystal Accounting*. —Roberta Furger

IN BRIEF

Peachtree Complete Network Accounting, Client Write-Up

WINDOWS The veteran easy-to-use accounting package now runs on a network, while a *Windows*-based add-on makes it easier for your accountant to review your books.

Peachtree Software

1505 Pavilion Pl.
Norcross, GA 30093
800/247-3224

Reader service no. 650

Publish It 2.0

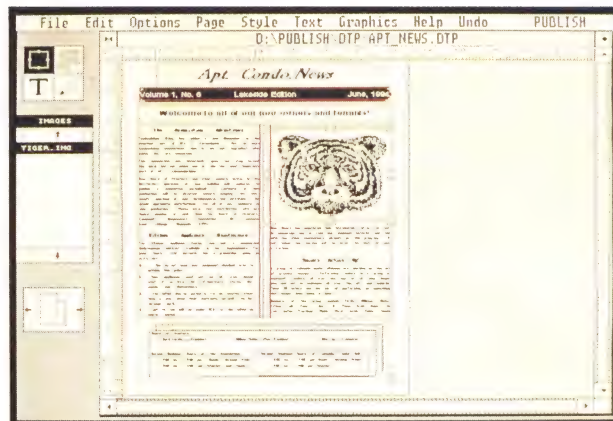
Budget Publisher Gains Power

Version 2.0 of *Publish It* brings the wunderkind of under-\$300 desktop publishers ever closer to the power and finesse of top-of-the-line programs. Heading the list of enhancements in this major upgrade are better memory management, improved text-flow features, and the addition

of soft fonts.

While it still runs in 640K of memory, *Publish It* also takes advantage of extended and expanded memory to speed screen refresh and prevent the occasional crash that previously plagued the program when you were working on longer documents. The new version also makes controlling text flow a lot easier. No longer must you estimate the number of pages you're adding to a document; the program does it for you. Nor do you have to create multiple, overlapping frames in order to wrap text around a graphic; now the deed can be done with a single, easily adjusted frame.

Version 2.0 retains the \$249.95 price and clean GEM interface as well as efficient *Ventura*-like handling of graphic frames and para-



Better memory management, improved text flow, and soft fonts move this budget publisher into the neighborhood of standards such as *PageMaker*.

graph tagging. *Publish It* has rectified its glaring shortage of fonts by adding Bitstream's *Fontware* with a handful of the most popular bit-mapped soft fonts. Other enhancements include custom page-sizing, a draft printing mode, automatic file backup, and frame grouping.

Publish It still suffers from modest kerning capabilities

and the lack of vertical justification. The program will allow you to kern any two highlighted letters. That's handy for headlines, but *Publish It* can't handle body text as ably, since there's no automatic kerning, no table kerning, no line kerning. *Publish It* isn't yet the match of *Ventura* or *PageMaker*, but it's getting closer. —Patrick Marshall

IN BRIEF

Publish It

This midpriced desktop publisher gains extended/expanded memory support and better handling of text and fonts.

Timeworks

625 Academy Dr.
Northbrook, IL 60062
800/323-7744,
708/559-1399 (fax)

Reader service no. 643

SpeedModem Champ

9600-Baud Budget

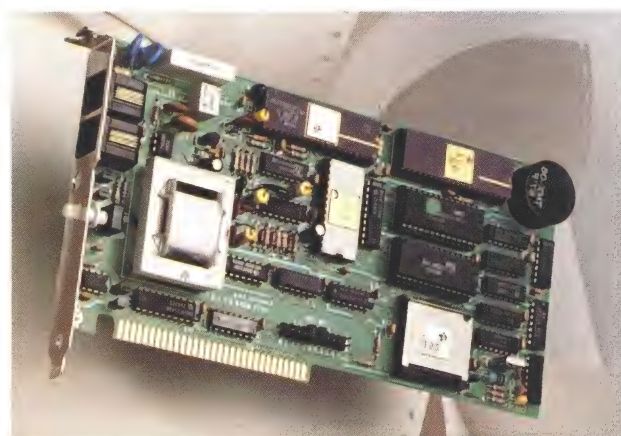
It's a big jump from the \$400-plus street price for most low-end 9600-baud modems to the \$149 price tag on CompuCom's SpeedModem Champ. Before you leap, you should know that CompuCom managed that price by omitting V.32 compatibility. That means the Champ can communicate at 9600 baud only with another Champ.

That restriction isn't necessarily as limiting as it sounds. What makes V.32 modems so costly is echo canceling, which lets you upload and download files simultaneously at 9600 baud. But most 9600-baud modems are used by corporations communicating between different offices. Your company can buy multiple Champs and send and receive messages se-

quentially at 9600 baud—or, as CompuCom claims, at up to 38.4 kilobaud effective throughput using its proprietary data-compression/error-checking protocol. The Champ also can dial up other brands of 9600-baud modems at

speeds up to 4800 baud using the MNP-5 protocol.

The Champ will do the rest of its job about as well as the costlier V.32 modems. It's a true 9600-baud modem with hard-wired speeds of 300 to 9600 baud, not just the 9600-



At worst a fairly priced 2400-baud modem, this speedster can save you big bucks at 9600 baud if you're willing to forgo V.32 error correction and transmit only to other SpeedModem Champs.

IN BRIEF

SpeedModem Champ

This budget modem sacrifices V.32 error checking at 9600 baud for a rock-bottom price.

CompuCom Corp.

1180-J Miraloma Way
Sunnyvale, CA 94086
800/228-6648,
408/732-4500
408/732-4570 (fax)

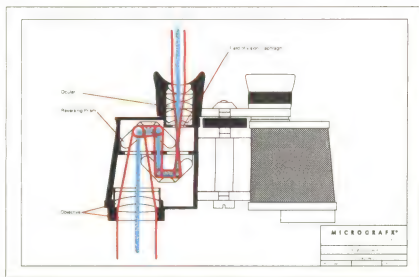
Reader service no. 645

baud effective throughput boasted by some 2400-baud modems using the V.42bis protocol. At worst, you get a competitively priced MNP-5 modem. At best, the Champ is a 9600-baud modem that trades industry-standard V.32 compatibility for a low price and decent function. —Mark Henricks

Focus on Precision Illustration With New Designer 3.1

New!
3.1 Release
Free Trial Software

See for yourself. New Designer 3.1 turns your PC into a precision illustration tool, running under the Microsoft® Windows™ environment. You'll get more accuracy in technical illustrations, greater performance in graphic designs and higher speed in desktop publishing layouts. It's now easier to turn what you can imagine into an image all can see. Call for your free trial software and feel the high performance yourself.

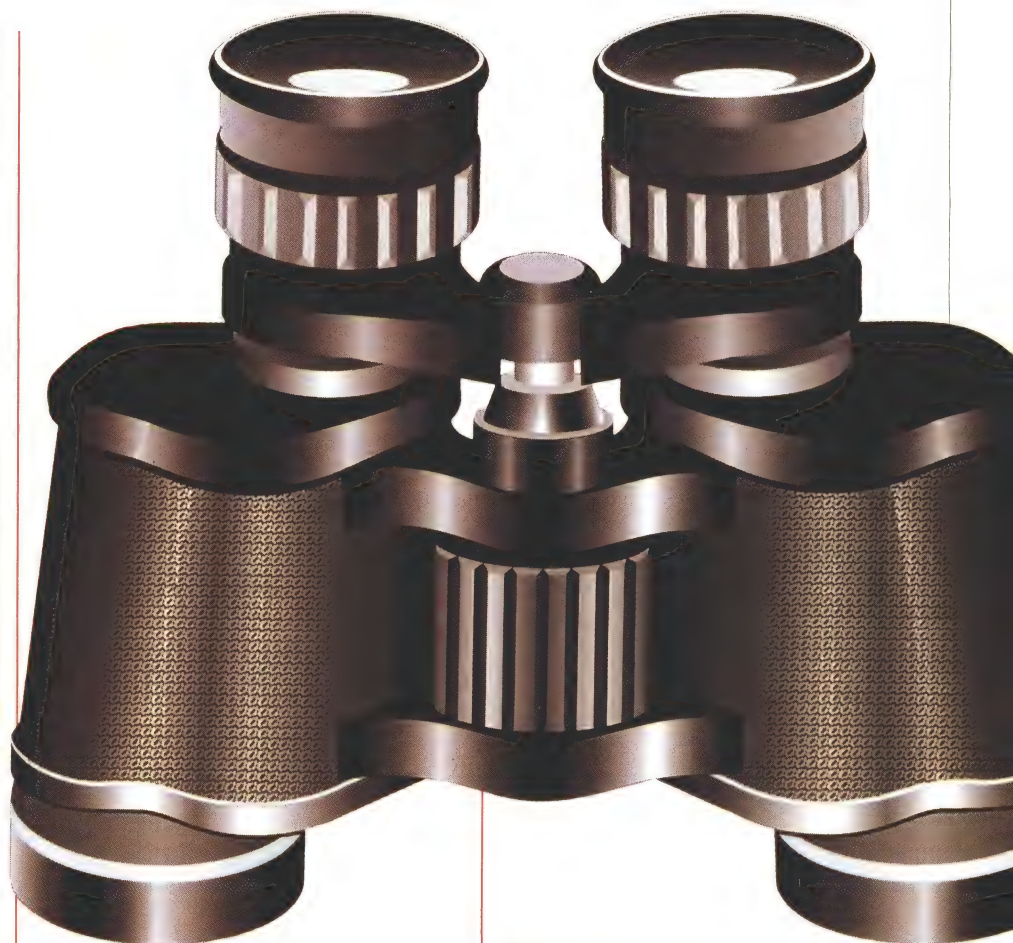


▲ Higher performance in Designer 3.1 speeds up drawings with faster wide styled lines—even wide dashed lines. Object snap points make precision a given.

The view from out front. With new Designer 3.1 you're ahead of the pack no matter how you look at it. With more usable features, higher performance operation and more flexible file handling, you'll be able to create and manipulate an image until it's just right. That's precision.



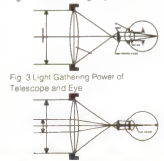
▲ Choose from 16.4 million colors and save any number of custom palettes for later use. Combine text and graphics with bitmapped images and true layering.



▲ "The power-users choice . . . a customizable toolbox has a tool for just about anything; precise and accurate autotracing utility, CAD-like layering and superb color-publishing capabilities," says PC Magazine.

► Desktop published articles become clearer with precision illustration from Designer 3.1. Multiple file formats speed up import and export of files.

The optics of the binocular works in one of two ways: Reversal of image by two prisms (Fig. 2) and Light gathering power of telescope and eye (Fig. 3).

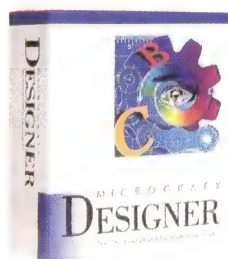


Outside perspective reflects well.

"Designer is an outstanding illustration package that receives Editor's Choice recognition. Designer is perhaps the most sophisticated of all the illustration packages," writes PC Magazine.



Software Digest reports that "Designer provides the best overall graphics package. The program offers state-of-the-art features, good performance, and unmatched ease of learning and use in a sophisticated package. Designer can handle virtually any free-form graphics or design task with ease." Designer was awarded a top-of-the-class rating.



Free hands-on trial. Call now, for a free working model of the new Designer, 800-733-3729, ext. 5050.

ProKey for Windows

Keyboard Shortcuts Made Simple

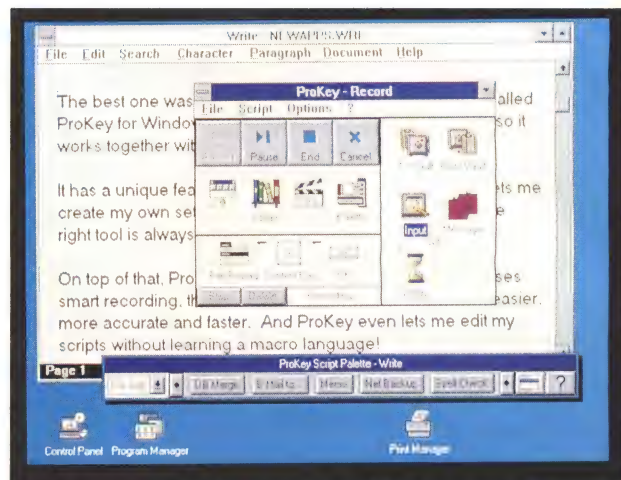
Windows's built-in Recorder accessory for creating macros is easy to use, but it won't let you edit them. Longtime macro specialist RoseSoft has a better answer: a serious macro programming tool that remains simple enough for nonprogrammers.

Unlike Recorder, *ProKey* for Windows records your mouse and keyboard actions intelligently, focusing not just

on keystrokes but on outcomes. For example, if you drag a window, *ProKey* asks what you want to record—the distance dragged or the final window position. Consequently, *ProKey* scripts are device independent; a procedure recorded at one screen resolution will work at another resolution. And if you tell it to do so, *ProKey* will drop the intelligent mode in favor of a literal record of your keystrokes.

You can play back scripts in three ways: by pressing a keyboard shortcut, by selecting a macro from the Run dialog box, or by choosing a 3-D button in *ProKey*'s scrollable Script Palette.

ProKey surpasses Recorder with handy features such as on-screen messages, prompts, and pauses. In addition, *ProKey* has "vaults," which act as multiple clipboards. And *ProKey* ships with a number of handy sample scripts to get



ProKey for Windows' "intelligent" macro recorder/editor focuses on the outcomes you want, not just keystrokes, so even mouse actions come out correctly on any resolution display.

you started.

No macro recorder frees you completely from the chore of debugging. But *ProKey* makes the task as simple as possible by letting you edit just the portion of the macro you want to change. Although *ProKey* permits repetitive loops and nesting, it lacks if-then conditionals and does not have the ability to generate dialog boxes. Nor will you find an

auto-execute feature for unintended operation.

More ambitious users should move on to batch languages such as PubTech's *BatchWorks* or SoftBridge's *Bridge Batch*. But at \$99 (\$60 for registered owners of the DOS version), *ProKey* is an inexpensive way for beginners to save steps and be more productive right away. —*Scott Dunn and Jesse Berst*

IN BRIEF

ProKey for Windows

WINDOWS A step up from Recorder, *ProKey* offers intelligent macro recording and editable scripts that help you navigate Windows quickly.

RoseSoft, Inc.

P.O. Box 70337
Bellevue, WA 98007
206/562-0225,
206/562-9846 (fax)

Reader service no. 647

RSE Variety Pak

Shareware Utilities on the Cheap

Ever feel short-sheeted on DOS functionality—that some features ought to be part of base code but aren't? The *RSE Variety Pak* fills those gaps while skimming a barely noticeable \$10 from your wallet.

Variety Pak is no misnomer: These utilities do everything from making your screen easier to read, to capturing screen shots, to making a file directory.

Each of the programs in this shareware ten-pack was previously offered separately for between \$10 and \$35, but you can have the complete set

with a printed manual for \$10 or with a manual on disk for \$5. The utilities make small demands on your system—all ten of them fit into only 360K on your hard disk.

For laptop—and desktop—users, the memory-resident *BriteLine* highlights the line your cursor is on. You can turn *BriteLine* on or off at any time within your application.

PC-Images lets you capture a number of screens and group them into a carousel to run as an impromptu business presentation. With only a minor change to its configuration, *PC-Images* will capture im-

ages in both Windows and non-Windows programs.

PC-Directory is an extended-file-name manager that will run as a stand-alone or memory-resident program. You can attach a note of up to 160 characters to any file

name, create a tree directory, and list files by attributes. You are also able to search for a file by attributes or a string of text as well as view and rename files.

You also get six other packages whose names suggest their functions: *Trash-It*, *Playback*, *PC-FileNotes*, *Nabbit*, *Remind Me*, and *Hide It*. All are activated by pre-selected hot keys, which are reconfigurable if they conflict with control keys used by another application. Finally, when it's time for you to forget about business for a while, *Variety Pak's* *Conjecture* treats up to four players to a round of spinning wheels, guessing letters, and solving word puzzles. —*Cathy Smith*

IN BRIEF

RSE Variety Pak

WINDOWS This easy-on-the-wallet shareware sampler keeps your data limber by giving you features you wish DOS provided.

RSE Shareware

1157 57th Dr. SE
Auburn, WA 98002
206/939-4105

Reader service 653

DUE TO THE STRONG GRAPHIC CONTENT OF THIS PROGRAM, USER DISCRETION IS ADVISED.

NEW!
2.1 RELEASE
FREE
TRIAL SOFTWARE

We don't want to infringe on anyone's freedom of expression.

Limit the number of fonts used to no more than two per presentation. Be consistent and use underlines, italics or bold type for emphasis.

we felt a warning was necessary.

Once you try it, you'll understand why. Charisma's extensive word and data charting functions, real drawing capabilities and total user control make it the most complete graphics solution for business. Unfortunately, some people have trouble resisting the temptation to use every Charisma feature on every presentation. That's understandable.

When you have access to 16.8 million colors, more than 40 fully editable fonts, thirteen drawing tools, a library of 2200 clip art images and the ability to turn any graphic element

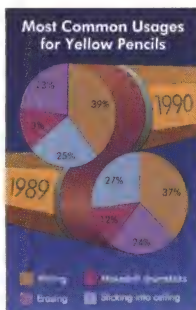
But Charisma gives you so many graphic possibilities in one powerful, Windows-compatible program,

into a bullet, it's easy to get a little too enthusiastic.

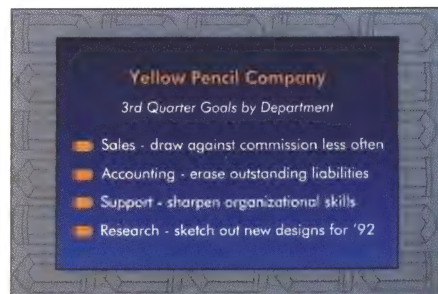
It's just as easy to get overly excited about the way Charisma lets you assemble entire presentations without switching between word processing, graphics and spreadsheet programs. Plus you see the results of your creativity immediately, since Charisma doesn't make you go back and forth between text and graphic



Add visual interest and keep audience attention focused with freeform illustrations or custom edited clip art. One graphic per chart works best.



Break out information logically and understandably with a variety of chart types. Then use the Harmony Palette for a unifying blend of just the right colors.



As you lay out word charts, use a template that provides maximum readability. Add spark to presentations by turning any graphic element, even your company logo, into a bullet.

ever seen to 35mm slides, overheads and handouts. Or make your point with SlideShow, Charisma's on-screen graphics presentation utility that includes dozens of transition effects.

Its strong graphic content prompted *InfoWorld's* Michael J. Miller to say, "Charisma offers the greatest flexibility in creating and editing charts that I've seen."

We think you'll agree.

Call 1-800-733-3729, ext. 5050 (3710 in Canada) for your free working model of Charisma 2.1*.



8 0 0 - 7 3 3 - 3 7 2 9

*Allow 4-6 weeks for delivery. Micrografix, Inc. 1303 Arapaho, Richardson TX 75081 • (214) 234-1769 (customers outside North America please dial extension 3710). Micrografix has offices in Los Angeles, Paris, London, Munich, Sydney and Copenhagen. Copyright © 1991, Micrografix, Inc. All rights reserved. Micrografix is a registered trademark, and Charisma is a trademark of Micrografix, Inc. All other products are trademarks or registered trademarks of their respective owners. All visual elements created with Charisma.

Circle 183 on reader service card

MicroPorte 1042

A Pocketful of Modem Offers Speed and Accuracy



Microcom's high-end modem won't force you to give up speed or data integrity for pocket-sized convenience.

Portability is the rage, and powerful laptops have truly become the offices of many salespeople, accountants, and other traveling professionals. Some can get by with inexpensive modems for phoning the office—but if the data you send is critical, you don't want

to leave data compression and error correction behind.

Microcom's 7-ounce MicroPorte 1042 is the size of an index card—light and small enough to carry in a pocket but powerful enough to complete data calls to headquarters or your E-mail service

with high speed and accuracy.

Nominally a 2400-baud modem, the \$649 MicroPorte 1042 achieves a top speed of 12,000-baud effective throughput via an unusual combination of hardware and software speed boosters. The MicroPorte starts by switching 2400 baud into 4000 baud with a Turbo Mode chip set. Under ideal circumstances, the effective throughput can then be tripled to 12,000 baud via the V.42bis data compression/error checking protocol. For cutting through really noisy land and cellular telephone lines, Microcom includes the MNP-10 error correction protocol it introduced a year ago. The company claims effective throughput of 8000 baud to other MNP-10 modems even on the noisiest cellular lines.

The modem ships with cables, software, and a copy of *Carbon Copy Plus*, Microcom's remote-control/file-transfer program—which you can also use on your desktop PC back at the office. To safeguard your confidential data, the 1042 has password security. It is powered by AC or its own 2-hour batteries, so you won't have to rely on an already stressed-out laptop power source; a recharger is included. —Mark Henricks

IN BRIEF

MicroPorte 1042

This pocket-sized modem gives you high speed and data integrity on the road.

Microcom Inc.

500 River Ridge Dr.
Norwood, MA 02062
800/822-8224,
617/551-1006 (fax)

Reader service no. 641

Network H.Q.

LAN Hardware and Software Inventory

When you're thinking about upgrades, do you ever wish you could wave a magic wand and get a list of all the hardware and software on every PC in your office?

It's not magic, but *Network H.Q.* solves this annoying problem. Items tracked in-

clude processor and coprocessor type, BIOS information, amount and configuration of memory, kind of video board, versions of DOS and NetWare, LAN adapter configuration, and more.

After installing *Network H.Q.* on your NetWare server, you just add a line to your network log-in script so every workstation runs a special inventory utility each time it logs on to the network. This inventory utility checks the workstation's hardware and software and saves the information to a central data base. You then can browse through the data and print out custom reports. You can also import the data into your favorite DBMS or spreadsheet for further massaging.

Perhaps *Network H.Q.*'s most useful feature is its "warning system." It will check workstations for specified problems—low amount of free memory or disk space, changes to network drivers, missing hardware, and so on.

Any problems detected are logged to a special file, which the supervisor can then check daily for signs of trouble. *Network H.Q.* costs \$395 per server and requires NetWare 2.15 or a later version. —Robert Lauriston

IN BRIEF

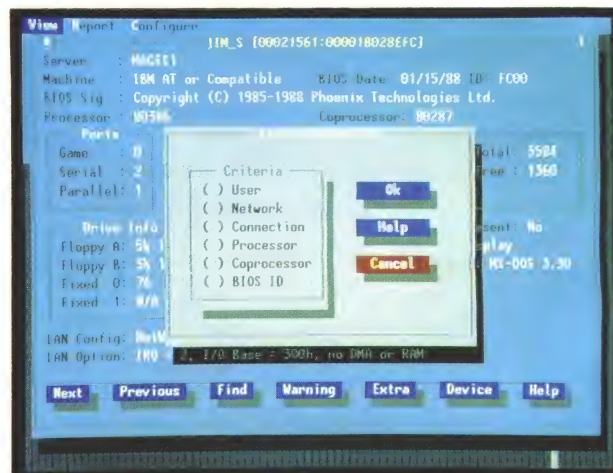
Network H.Q.

This LAN-management utility shortens the time needed to upgrade hardware and software.

Magee Enterprises

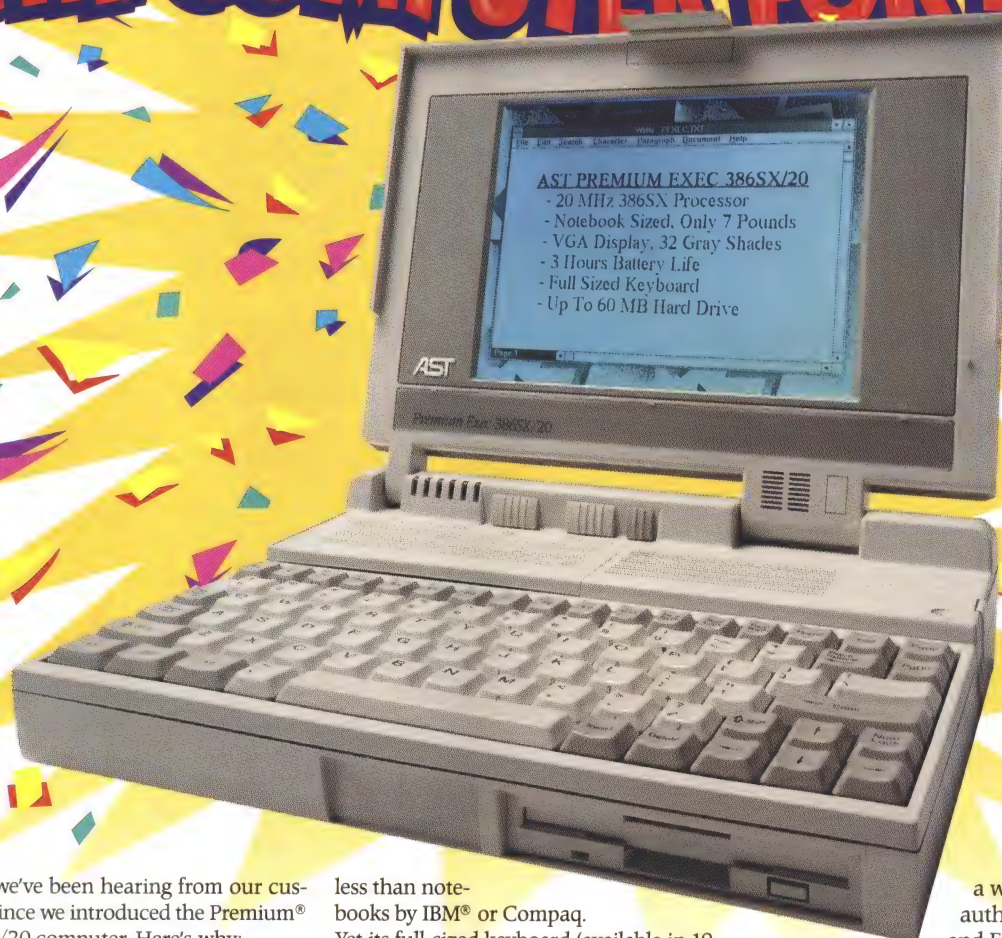
P.O. Box 1587
Norcross, GA 30079
800/662-4330,
404/368-0719 (fax)

Reader service no. 651



No more visits to every workstation on a LAN to determine your hardware/software inventory—just check the *Network H.Q.* data base.

WOW!! AST'S THE COMPUTER FOR ME!



That's what we've been hearing from our customers ever since we introduced the Premium® Exec™ 386SX/20 computer. Here's why:

"The excellence of the screen makes this a definite winner."¹ The Premium Exec's VGA display achieves superiority by using 32 levels of gray. Compaq® and Toshiba® only use 16.

How about size? The Premium Exec weighs

less than notebooks by IBM® or Compaq.

Yet its full-sized keyboard (available in 19 language versions) won't cramp your style.

Since your time is valuable, the Premium Exec gives you over three hours of battery life. "AST has done an excellent job of implementing power-saving features in its notebook."²

Plus, AST provides software to keep you going: MS-DOS®, Laplink™ III and Battery Watch™. Toshiba simply includes DOS and others give you no software at all. And our full array of options such as FAX modems, numeric keypads and spare battery packs will further increase your productivity.

As for service, nobody does it better. Premium Exec owners can rely on free comprehensive direct support programs,

a worldwide network of authorized service centers and ExeCare™, an optional

program guaranteeing you service or replacement within 24 hours.

Even with its powerful 386SX processor and 20 MHz speed, the Premium Exec is still priced \$400-\$3000 less than Toshiba, Compaq and IBM. "AST has succeeded in delivering SX power and portability at desktop prices. Can you ask for anything more?"³

For more information call 1-800-876-4AST.

AST: The Clear Choice!

	AST Premium Exec 386SX/20	Compaq LTE 386s/20	Toshiba T2000SX	IBM PS/2 L40 SX
Display/Gray Shades	VGA/32	VGA/16	VGA/16	VGA/32
Hard Drive (Models)	20/40/60 MB	30/60 MB	20/40 MB	60 MB
CPU Speed	20 MHz	20 MHz	16 MHz	20 MHz
Weight (lbs.)	7	7.5	6.9	7.7
Price*	\$2995	\$4399	\$3399	\$5995

*U.S. Suggested retail prices, 6-14-91

Footnotes: 1 - Government Computer News, April 1, 1991. 2 - PC Sources, June 1991. 3 - PC User (United Kingdom), April 9, 1991. AST markets products worldwide, outside of the United States and Canada call AST International on (714) 727-9292 or fax to (714) 727-9360. AST, AST logo and Premium registered, Exec and ExeCare trademarks AST Research, Inc. All other brand and product names are trademarks or registered trademarks of their respective companies. Copyright © 1991 AST Research, Inc. All rights reserved.

AST
COMPUTER

The Power Of Choice.

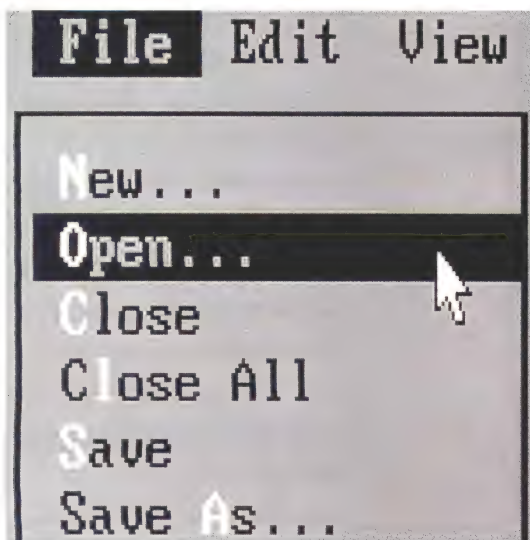
To Go.

Circle 10 on reader service card

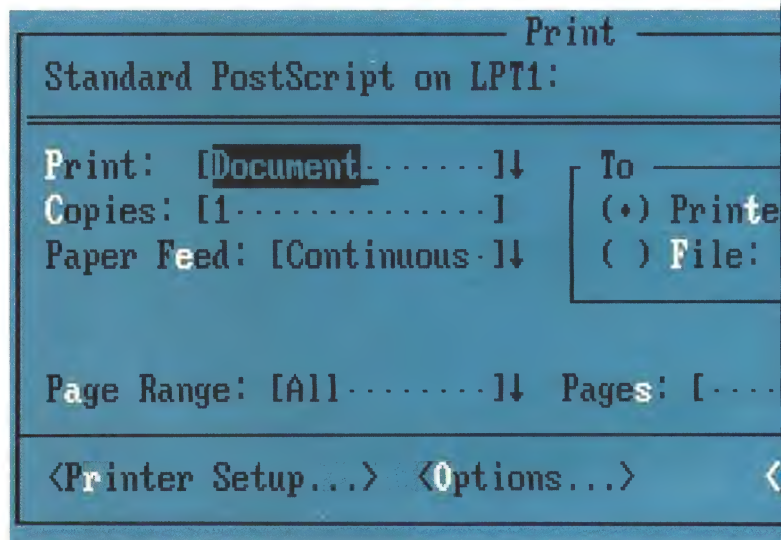
Why the b processor is



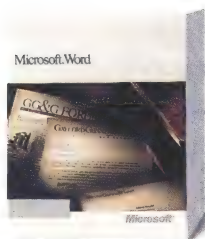
Gone is the seemingly endless string of keystrokes to format. Make headings bold and subheadings italic. Make text flush left or flush right. All it takes is a point and click.



With Word, virtually any and every command imaginable can be accessed directly from the menu. So it's bye-bye keystrokes.



Word 5.5 is so intuitive it questions you, so you don't have to question the manual. Word comes complete with dialog boxes that prompt you for specific parameters and other vital info.



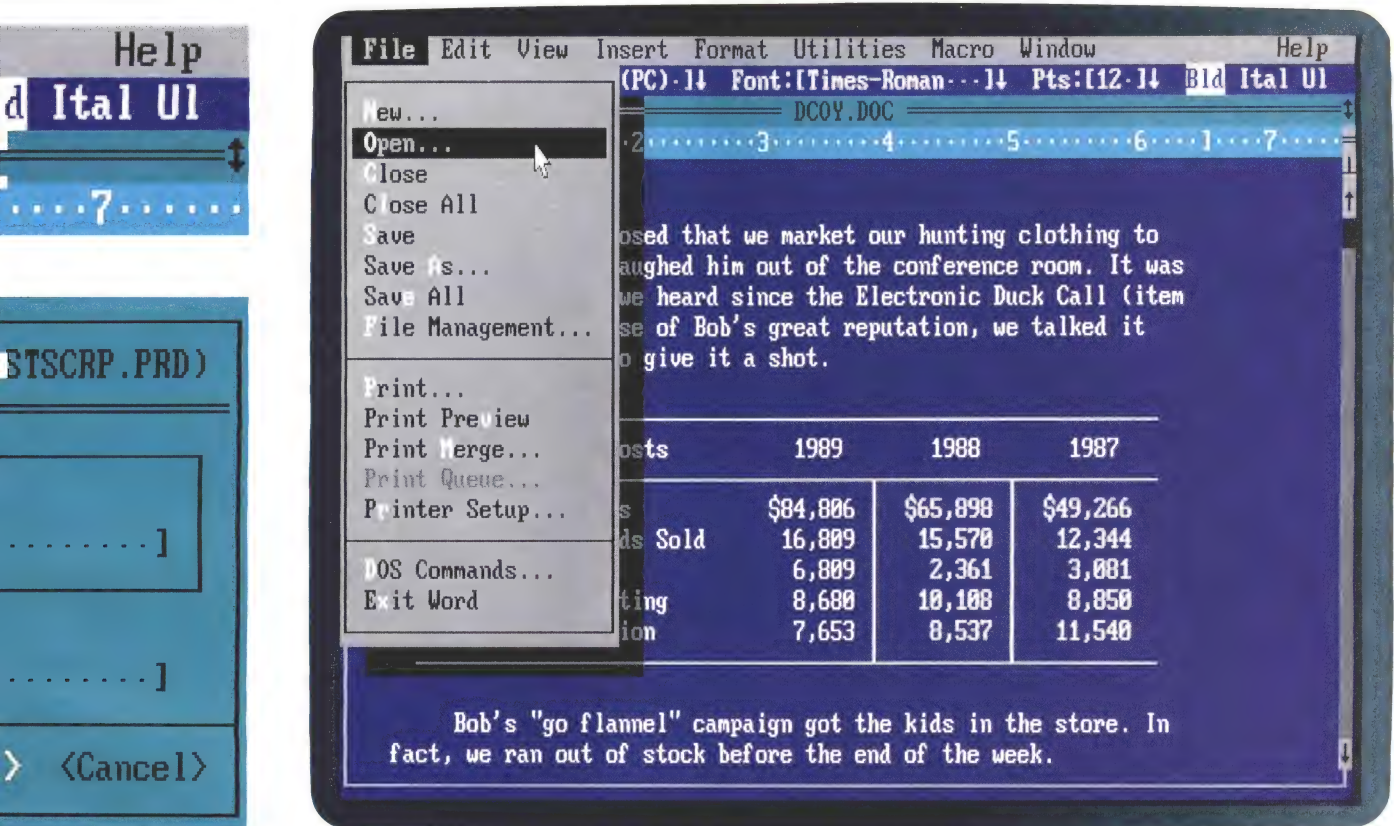
Microsoft® Word 5.5 is so incredibly easy to learn and use, a lot of people may find it very difficult to believe it's a character-based word processor.

You see, the Word interface is remarkably similar to those found

in today's intuitive, Windows™-based software packages.

What's even more remarkable is what it'll do for you. With Word you can easily learn and access a host of incredibly powerful features via pull-down menus and dialog boxes. Things like point-and-click for-

It DOS word nothing like one.



Word 5.5 gives you the types of benefits you'd expect to find in a Windows-based word processor. Not a DOS one. Do things like easily mix text, numbers and graphics between several open documents.*

matting, style sheets, print preview and mail merge. Things that save time. Not to mention frustration.

Perhaps best of all, it'll run on almost any PC in your office. All you need is a modest 384K in RAM and two floppy drives.

For a free Working Model or

the name of a dealer near you, call (800) 541-1261, Department R89.

And see why no other character-based word processor even comes close to Word 5.5.

Microsoft

A

fter 20 Million Pages Of PostScript Color Output, The Last Print Looks As Great As The First.



QMS ColorScript Prints... Brilliant and Resilient

Since 1987, QMS® ColorScript™ 100 printers have produced over 20 Million hard copies and transparencies around the world! And because the color technology is engineered to use new ink with each print, the last page literally looks as bright and true as the first. Reliable QMS technology unites with the industry standards of Adobe PostScript and PANTONE® Color to put exciting persuasive color at your fingertips page after page.

Presenting The NEW QMS ColorScript 100 Model 10p Printer

If it's dynamic presentations you're after, you need the Model 10p. From business presentations to training programs, the Model 10p delivers vibrant, visually exciting colors that help you communicate ideas clearly. QMS screen angling technology and special presentation inks make these unusually captivating colors possible. And it's a proven fact that color presentations increase audience information retention and raise a

recipient's tendency to act upon the information. So, in today's competitive business environment, the key question becomes, "Can we afford *not* to have the power of color?"

The QMS ColorScript 100 Model 30i Printer, Strictly For The Image Conscious

Extremely low cost Pantone-approved proofs in about 60 seconds. If you're a graphic designer, commercial artist or publisher it's easy to see how the Model 30i is revolutionizing your business. The Model 30i is changing the relationship between speed, quality and cost by allowing you to do your job faster, cheaper and better!

The Model 30i is the first true "what-you-see-is-what-you-get" color printer. The colors you see on a Pantone-approved monitor are the same colors you'll see on a Model 30i proof and the same colors you'll see on the finished, printed piece. Standard 11" x 17"/A3 paper handling capacity allows you to design actual size 8 1/2" x 11" full bleed proofs with crop marks.

All QMS ColorScript 100 printers ship with AppleTalk, parallel and serial interfaces to accommodate quick, easy set-up in the most popular host environments.

QMS Service Keeps Pace With Outstanding Products

QMS National Service represents a strong commitment to maintain our
Circle 202 on reader service card

Features That Will Color Your Perception Of Business And Design Forever

- Compatible with Macintosh® IBM® PC and other popular host computing platforms
- 35 resident Adobe® PostScript® typefaces on a 68020 MPU-based controller
- Model 10p ships standard with 4 MB RAM
- Model 10 ships standard with 5 MB RAM for legal-/special A4-size printing
- Model 30i ships standard with 8 MB RAM for letter-/A4- to ledger-/A3-size printing
- AppleTalk®, serial and parallel printer interfaces are standard
- SCSI interface supports up to seven external hard drives of unlimited capacity
- 300 x 300 dpi resolution of bright, saturated colors

printer products in peak condition. When maintenance is required, QMS National Service is available nationwide, offering service programs to meet specific needs. For more information about depot and on-site service options call QMS National Service at 1-800-762-8894.

Top Performers Right Out Of The Box

Call us today and we'll help you decide which QMS printer best fits your needs. Or FAX QMS Product Information at (205) 633-4866.

1-800-523-2696 EXT. 79

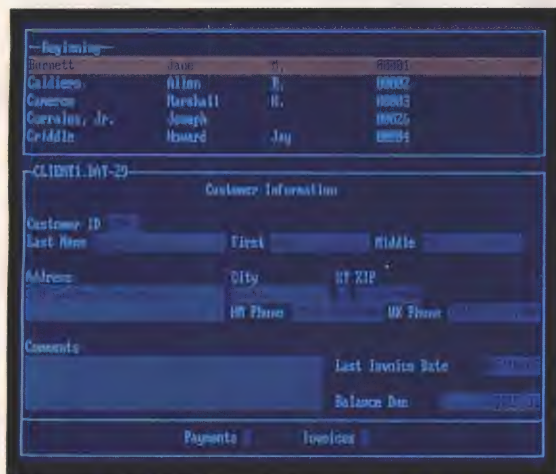
QMS
Where Imagination Leads

©1991 QMS, Inc.
*PANTONE® is Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materials. PANTONE Colors generated by QMS PostScript printers are four-color simulations and may not match PANTONE-identified solid color standards. Use current PANTONE Color Reference Manual for accurate color.
The following are trademarks or registered trademarks of their respective companies: QMS, ColorScript and the QMS logo of QMS, Inc.; Adobe and PostScript of Adobe Systems, Inc.; IBM of International Business Corp.; AppleTalk and Macintosh of Apple Computer, Inc.
QMS ColorScript 100 Models 10 and 30i shown.

UPDATE

New Versions of Your Favorite Products

DataPerfect 2.2



New macros in version 2.2 help you exchange data with other WordPerfect products.

Version 2.2 of *DataPerfect* includes new macros to help you exchange data with the *WordPerfect Office* Notebook and merge *DataPerfect* records into *WordPerfect* documents. A new indexing system improves network performance, and the added *WordPerfect Office Shell*

improves integration with other products in the line. Version 2.2 retails for \$495, upgrades from previous versions are \$89. *WordPerfect Corp.*, 1555 N. Technology Way, Orem, UT, 84057; 800/451-5151, 801/222-5077 (fax).

Reader service no. 654

PC-Kwik Power Disk 1.1

Version 1.1 of *PC-Kwik Power Disk* makes it easier for you to test and defragment your hard disk by using a mouse to rearrange your files' physical locations. You can select a cluster from a map of your hard disk and view its file in ASCII or hex format. You can sort directories and files by name, extension, date and time, or size so they'll come up on screen in a convenient order. The \$79.95 product is available to current *Power Disk* users for \$19.95 and to users of other Multisoft

programs for \$39.95. Multisoft Corp., 15100 S.W. Koll Pkwy., Ste. L, Beaverton, OR 97006; 800/759-5945, 503/646-8267 (fax).

Reader service no. 655

BeckerTools V2 Plus

WINDOWS *BeckerTools*, the *Windows* file manager for people who like lots of icons, becomes a utilities collection with the addition of backup, file recovery, and defragmenting programs. The three new modules in *BeckerTools V2*

Plus can run as stand-alone *Windows* programs or as part of the file manager. You can multitask the backup and recovery programs under *Windows*, but you must close all *Windows* applications before defragmenting your hard disk. Data loss can result from writing to a disk while files are being physically moved. *BeckerTools V2 Plus* lists for \$129.95; the upgrade from version V2 is free. Abacus, 5370 52 St. SE, Grand Rapids, MI 49512; 800/451-4319, 616/698-0325 (fax).

Reader service no. 656

16/4 Pocket Token Ring Adapter

A 16-Mbps Token Ring addition extends Xircom's family of pocket-sized adapters that give laptops entrée to ethernet, Arcnet, and token ring LANs. The LAN adapter plugs into your PC's parallel port, and, as with all Xircom adapters, is used instead of an internal LAN board. The new version is software switchable between 4 and 16 Mbps. Its SmartRing software takes 17K, rather than 40K, worth of portable memory. The 16/4 Pocket Token Ring Adapter costs \$895. Users of the older 4-Mbps adapter can upgrade to *SmartRing* software for \$75. Xircom, 26025 Mureau Rd., Calabasas, CA 91302; 800/874-7875, 818/878-7630 (fax).

Reader service no. 658

Solomon III Version 7.0

Version 7.0 of the Solomon III high-end accounting series increases integration between modules, amount of historical

data retained, and types of financial reports available. New tools let you move among modules more easily, and you'll find new ties between modules that are often used in tandem, such as Accounts Payable and Purchasing. The per-module price for DOS and NetWare versions is \$795. A ten-module Solomon III Equity Pack is \$2995. Solomon Software, 1218 Commerce Pkwy., Findlay, OH 45839; 800/879-2767, 419/424-3400 (fax).

Reader service no. 659

Superbase 4 version 1.3, Superbase SQL Library

WINDOWS Version 1.3 of *Superbase 4* has added SQL support through a collection of *Windows* DLLs called the *Superbase SQL Library*. The upgrade also offers more programmability, better network support, and faster execution of queries. The *Superbase SQL Library* can simultaneously address multiple SQL servers using different SQL dialects, including Microsoft's *SQL Server*. The *Library* lets you design a report that can recognize and retrieve data directly from a SQL server—a capability the standard *Superbase* report writer doesn't provide. Version 1.3 retails for \$695, *Superbase SQL Library* for \$495. Upgrades are \$50. Precision Inc., 8404 Sterling St., Irving, TX 75063; 800/562-9909, 214/929-4888, 214/929-1655 (fax).

Reader service no. 660

For more information about any product, contact the manufacturer or circle the number on the reader service card. ☎

INTRODUCING THE EVER HAPPENED



BEST THING THAT TO WINDOWS.

THE NORTON DESKTOP™ FOR WINDOWS.™

Now you can make Windows perform the way you've always wanted—without changing the way you use it. For just \$149,* The Norton Desktop includes an impressive collection of Peter Norton's best programs that make Windows more accessible and a whole lot easier to use.

For starters, you can move your programs and file groups from the confinement of the Windows Program Manager to the freedom of The Norton Desktop—it's like having your file manager and program manager transparently integrated!

The Norton Desktop's enhanced file manager allows you to launch, copy, move, view and delete a

file or application by clicking and dragging icons on the desktop. You can also print documents by dragging files to any printer icon. In fact, our icon editor makes it easy to select any of the more than 150 icons provided, while The Norton Viewer enables you to instantly

view files from over 30 Windows and DOS applications.

Not only does The Norton Desktop make sure that your files are well managed, it also ensures they're well protected.

We've included The Norton Backup™ for Windows,** the fastest, most reliable Windows backup you can buy. You can easily set-up automatic backups for any time of the day or night, whether you're present or not, and backup in the background, even to and from network drives.

The Norton Desktop also provides the easiest UnErase™ ever; for stand-alone PCs and network

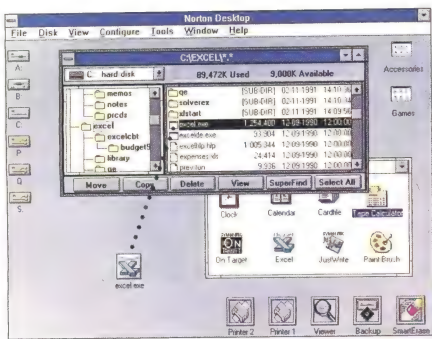
systems, plus the industry's most power-

ful automatic disk diagnosis/repair.

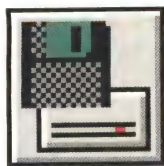
The program has a host of additional features, including a rich assortment of colorful screen savers, along with our SuperFind™ text searching, which enables you to search and find files quickly and easily on any disk drive—even on networks.

So if you're ready to improve your Windows, call **1-800-343-4714, Ext. 722W** for more information about The Norton Desktop. Or visit your nearest dealer and pick up a copy for yourself. It could be the best thing that ever happened to your PC.

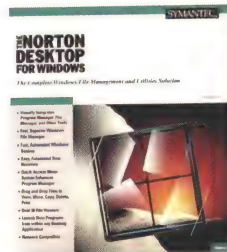
UnErase



The Norton Desktop integrates a file manager and program manager into one seamless desktop.



Norton Backup



SYMANTEC.™

*Suggested retail price, USA only. **Also available separately for \$129 (MSRP). © 1991 Symantec Corporation. All rights reserved. The Norton Desktop for Windows is a trademark of Symantec Corporation. All other brand or product names mentioned are trademarks of their respective holders.

286 Notebooks: Traveling Light

Looking for a notebook computer with great portability and long battery life? As our tests show, a 286 notebook can run almost anything an SX notebook can—for a lot less.

Michael Goodwin and TJ Byers

It's time to buy a couple of laptops so department staffers can work productively on business trips, or maybe you're just in the market for a handy unit to take home on weekends. You know you want one of the hot new notebook machines, the ones that weigh less than 10 pounds including a hard disk and a built-in floppy drive.

But which kind? A 286 or a powerful 386SX?

High-end 386SX notebooks are perfect for power users with deep pockets and nearby AC plugs. The units are fast, run *Windows* in enhanced mode, and will handle any software that comes along. But SXs have two Achilles' heels: short battery life and high prices.

Notebooks built around the 286 make more sense for budget-conscious globe-trotters who need to work long hours on portable power. These units are a bit slower, and they may lock you out of 386-specific applications—but they keep on cooking away from the power plug and can save you big bucks in the bargain.

The battery advantage enjoyed by 286s is striking. For in-flight computing, 3 hours of battery life is the least you should expect from any notebook.

The 286s come with a price advantage as well. The average 286 notebook costs \$500 to \$1000 less than a comparable 386SX.

These 286 notebooks come in two clock speeds, 12 and 16 MHz. However, even the hot 16-MHz models can't

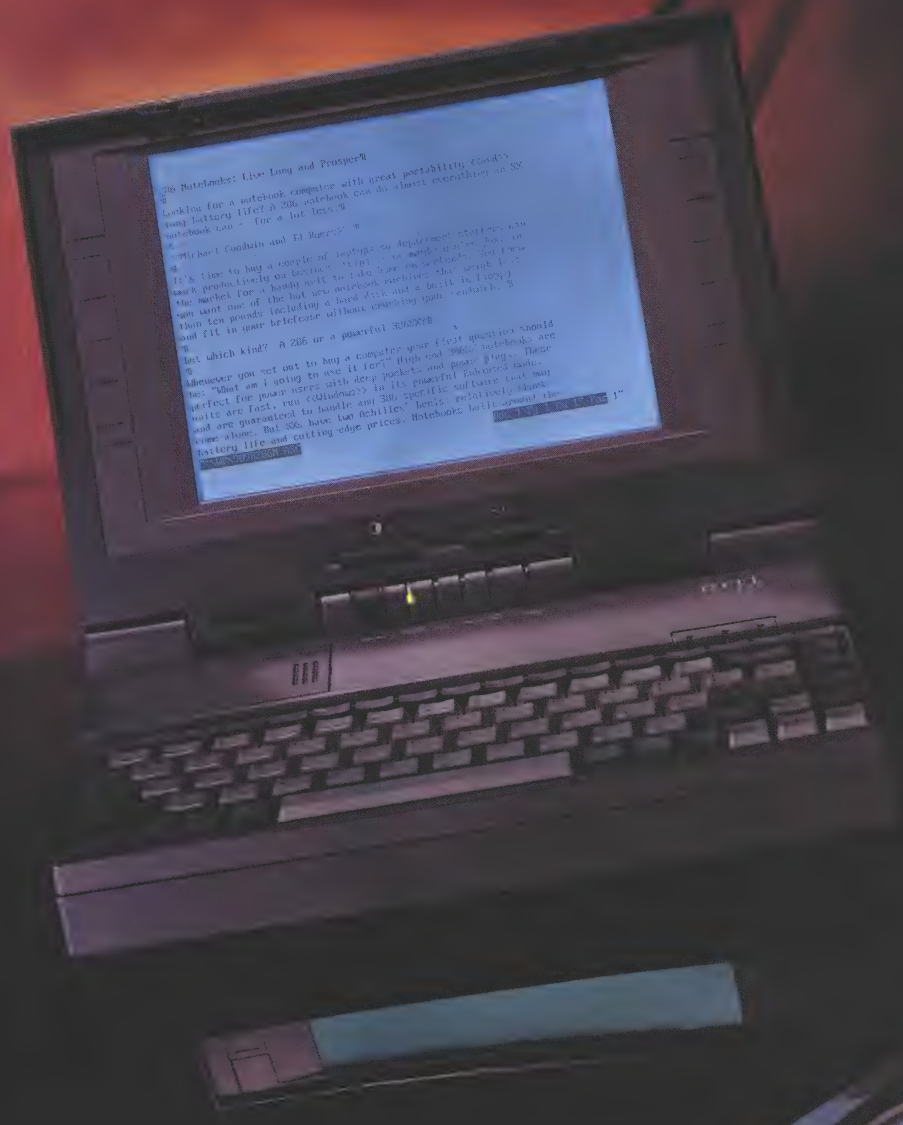
match the performance of a 386SX. Still, if your PC roadwork is restricted to monofont word processing, a bit of after-dinner 1-2-3, or logging on to office E-mail when you're out of town, a 12 MHz will do fine, while *Windows* runs surprisingly fast on a 16-MHz 286.

This roundup evaluates eight units: three look-alike 16-MHz screamers from Grid, Panasonic, and Tandy, plus five 12-MHz systems from Compaq, Dell, NEC, Toshiba, and Zeos. We set them up in a standard configuration: 2MB to 3MB RAM, a 20MB hard disk, a 1.44MB built-in floppy drive, a built-in 2400-baud modem, at least one parallel and one serial port, and DOS. Our weights are *traveling weights*, including the battery, the AC adapter/charger, and the modem. And all prices are *street prices*, to reflect what you'll really pay.

The winner? Dell's System 212N earns a Best Buy. If you're a speed-hound—and you can live with a brief 2 hours of battery life and a sky-high price—Grid's 16-MHz 1720 is a tempting, if expensive, second choice.

Even if business trips take you far from AC power, the coast is clear. Long battery life and affordable prices make the best of these featherweight workhorses the notebook buys of the year.

Michael Goodwin is an associate editor and TJ Byers a contributing editor for PC World.



The Notebooks: Live Long and Prosper!

Looking for a notebook computer with great portability, good battery life? A 286 notebook can do almost everything an 88 notebook can - for a lot less.

Michael Conduin and Ed Rogers

It's time to buy a couple of laptops no department stores can match, particularly on terms. They're as mobile as you, and they're perfect for a handy unit to take home or abroad. For those who want one of the hot new notebook computers that weigh less than ten pounds (including a hard disk and a backlit display) and fit in your briefcase without crushing your umbrella.

But which kind? A 286 or a powerful 386SXX?

Whenever you set out to buy a computer your first question should be: "What am I going to use it for?" High-end 386S notebooks are perfect for power users with deep pockets and power plugs. These units are fast, run cool (mostly) in its powerful software and may even be guaranteed to handle any 386-specific software that may come along. But 386s have twoAchilles' heels: relatively short battery life and cutting-edge prices. Notebooks built around the

Compaq LTE/286

PROS: Small, longest battery life in roundup, affordable

CONS: Slow, heavy, small screen, long recharge, poor keyboard

Everyone hates to see a champion fall, but Compaq's 12-MHz LTE/286 (a World Class Award winner) is showing its age. True, its 4-hours-plus battery life is still the best, its dimensions are still the smallest, and its price (\$2870) is quite reasonable. But the rest of the story is pretty grim: Its 2.6MB RAM capacity is cramped. Its CGA screen is the smallest in the roundup and so squat that circles become ellipses. Performance is poor, and its 9-hours-plus recharge time is unacceptable. The LTE's keyboard suffers from emulated page-control keys and a nonstandard cursor key layout that drives some people crazy.

Compaq's new tech support line is fast and accurate, but the company's lack of a guaranteed fast-replacement policy is unfortunate. All told, we can recommend the LTE/286 only for users who must have the longest battery life they can get.



Small size and long battery life are appealing, but the Compaq's tiny screen and poor performance are problems.



Dell's Best Buy combines terrific portability with a big, bright screen, a fine keyboard, and superior service and support.

Dell System 212N

PROS: Light, small, long battery life, great service and support

CONS: Text could be sharper

It's easy to see that Dell has put some thought into what makes a great notebook. This mid-priced, 12-MHz unit boasts excellent portability (both weight and size are close to the bottom of the scale) and delivers nearly 3.5 hours of battery life. The 212N is also the only system here to give you a built-in mouse port, and its sliding rear-panel port cover is a real convenience. The keyboard features dedicated page control keys and cursor keys in the standard inverted T. Moreover, the 212N has one of the largest screens in the roundup, although its black-on-white text could be a bit blacker.

Service and support are absolutely top-notch, just as you would expect from Dell. And although its performance may not be the most dazzling, Dell's featherweight System 212N PC touches all the bases, and it earns its Best Buy with ease.

Grid 1720

PROS: Fast, light, good keyboard, quick recharge, 60MB hard disk option

CONS: Expensive, short battery life, text could be sharper

Here we have the first of three virtually identical 16-MHz "triplets" built by Tandy in Fort Worth, Texas, from boards designed by Matsushita. These rugged, 7.2-pound systems are the fastest, lightest 286 notebooks you can buy. They all provide capable keyboards and paper-white displays, and they recharge in less than 90 minutes—but their battery life is barely over 2 hours. The only key differences between the triplets are service and price. Grid sells its box for \$4285—the highest price in the roundup—but you can get Tandy's version for about \$800 less, and Panasonic's clone for nearly \$1500 less.

Grid's tech support is the best of the three, and it's the only one of the triplets to boast a 60MB hard disk option. This makes it your best bet as a 286 Windows machine—but you'll have to decide whether that's worth \$1500.



This speedy 16-MHz machine is both light and tiny—and its 60MB hard disk option will be welcome to Windows users.

Buying Smart: Have Notebook, Will Travel

Whether you need to run Windows in the window seat or update your marketing plan in a meeting, spend one day schlepping a notebook around, and you'll agree there's no such thing as too light or too small. But as notebooks come closer to desktop PCs in capability, other buying issues become increasingly important.



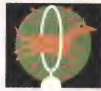
PORTABILITY

Don't let a salesperson talk you into anything heavier than 10 pounds traveling weight: That includes a built-in floppy, the battery, the AC charger, and a modem.



BATTERY

Demand at least 3 hours of battery life with power-saving features like hard disk time-out disabled. While these options may buy you a few more minutes of life, they make working much less efficient. Recharge time of 1.5 hours or less is a big plus.



PERFORMANCE

All things being equal, the faster your processor runs, the quicker you'll be done with your work. If you can't live without Windows, you'll definitely want a 16-MHz system.



EXPANDABILITY

Many applications can benefit from a large RAM disk or lots of expanded memory, so we consider 2MB RAM capacity a minimum; 4MB is even better for Windows. And while a 40MB hard drive is big enough for most purposes, Windows users will want at least 60MB.



SCREEN

All these systems have backlit or sidelit displays. The bigger the screen, the better; but watch out for squat screens that distort graphics and make text hard to read. The more gray shades your notebook can display, the better color graphics will appear on the monochrome screen—look for 16.



KEYBOARD

The closer your notebook keyboard comes to the standard PS/2 model, the better. Emulated keys (which, for example, force you to hold down a special key to make a cursor key work as <Page Down>) slow typing and increase errors. Look for dedicated cursor keys in the familiar inverted T, and dedicated page and function keys. Standard layout for <Alt> and <Ctrl> makes life easier too.



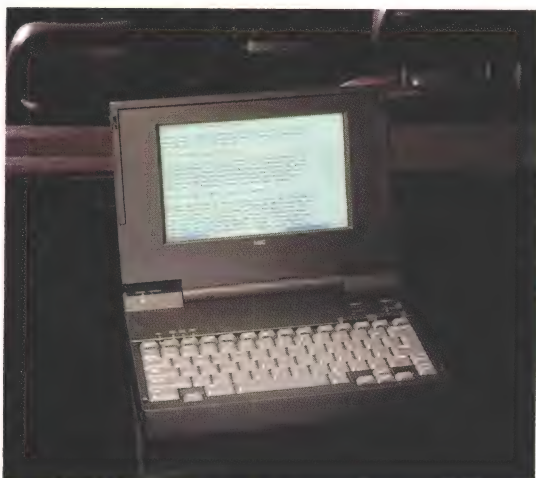
SERVICE AND SUPPORT

The key service issue is quick replacement, plus data recovery—there's little to "re-pair." For tech support, we call each central number three times; support is scored on promptness, accuracy, and standard support policies.



PRICE

Cost comparisons are based on street price. We call PC dealers in major cities and get a quote for the PC World configuration. Results are averaged.



This light, compact low-price champ will run you about \$2600, but the battery dies after only 100 minutes.

NEC UltraLite 286F

PROS: Inexpensive, small

CONS: Short battery life, emulated page keys

If you want to know the very least you can spend for a 286 notebook, ask NEC. At \$2558 the 286F sets the price curve, and yet it's small and light, with crisp double-scan CGA text and a fairly fast recharge time. Of course there are trade-offs, and one of them—a fleeting 100 minutes of battery life—is pretty serious. Also, performance is slow, graphics are only CGA resolution, and the screen is small and a bit wide. The biggest disappointment is the mushy keyboard, which forces you to press <Fn> to activate the emulated <Page Up> and <Page Down> keys.

Tech support is fast and accurate, but there's no turnaround guarantee. The bottom line? There may be better 286 notebooks, but no cheaper ones. So if you're on a budget and rarely work away from the power outlet, this system could be talking to you.

FEATURES EVALUATION

The Bearable Lightness of Being a Dell

You'll hold up longer, and work better, with the Best Buy System 212N from Dell.

- Yes
○ No
● Deficient

	Compaq LTE/286	Dell System 212N	Grid 1720	NFC UltraLite 286f	Panasonic Business Partner 270	Tandy 2810FD	Toshiba T1200XE	Zeos Notebook 286
Standard features								
Street price ²	\$2870 ³	\$2947	\$4285 ⁴	\$2558	\$2790 ⁴	\$3499 ⁴	\$2969 ⁴	\$2682 ⁴
List price ²	\$3597 ³	\$3081	\$4285 ⁴	\$3597	\$4136 ⁴	\$3499 ⁴	\$3846 ⁴	\$2682 ⁴
CPU speed	12/8 MHz	12/8 MHz	16/8 MHz	12/6 MHz	16/8 MHz	16/8 MHz	12/6 MHz	12/8 MHz
Portability								
Traveling weight (pounds) ⁵	8.6	7.7	7.2	8	7.2	7.2	9.75	8.8
Size (inches)	11x8.5x1.9	11x8.5x2.1	12.1x10x1.8	11.5x8.5x2.1	12.1x10x1.8	12.1x10x1.8	12.2x11x2	12.2x10x2
Volume (cubic inches)	178	196	218	205	218	218	268	244
Battery								
Battery life (power-saving enabled/ disabled, hours:minutes)	5:00/4:10	3:40/3:20	3:00/2:10	3:00/1:40	3:20/2:10	3:20/2:10	2:35/2:10	3:20/2:30
Recharge time	9:15	2:30	1:23	1:40	1:23	1:23	2:40	1:02
Expandability								
RAM capacity	2.6MB	5MB	5MB	5MB	5MB	5MB	5MB	5MB
Largest hard disk option	40MB	40MB	60MB	20MB	20MB	20MB	40MB	60MB
Mouse port	○	●	○	○	○	○	○	○
Expansion chassis available	○	●	○	○	○	○	●	○
Screen								
Display	CGA	VGA	VGA	CGA	VGA	VGA	CGA	VGA
Size (square inches)	29	41	35	35	35	35	39	43
Shades of gray ⁶	4	16	16	16	16	16	4	16
Keyboard								
Cursor keys in standard T	○	●	●	●	●	●	●	●
Dedicated page control keys	○	●	●	○	●	●	●	○
Dedicated function keys	○ ⁷	●	●	●	●	●	●	●
Service and support								
Warranty (months)	12	12	12	12	12	12	12	12
On-site service available	○	●	○	○	○	○	○	○
Vendor support								
Central support/toll free	●/●	●/●	●/●	●/●	●/●	●/○	●/●	●/●
Daily support (hours)	12	15	11	9	9	9.5	10	24
Weekend support	○	●	○	○	○	○	○	●
Electronic BBS/fax	○	●	○	●	○	●	●	●
Turnaround policy	○	24 hrs on-site	10 days	○	○	○	24 hours	24 hours
Vendor-to-dealer support								
Dedicated support staff required	●	direct	direct	●	○	●	●	direct
Support staff training required	●	direct	direct	●	○	●	●	direct
Dedicated support line for dealers	●	direct	direct	●	●	●	○	direct
Inventory and parts requirement	●	direct	direct	●	○	○	●	direct

¹ 1990 World Class Award winner.

² Standard configuration includes 2MB RAM, 20MB hard disk, 1.44MB floppy drive, 2400-baud modem, at least one parallel and one serial port, and DOS.

³ Includes 2.6MB RAM.

⁴ Includes 3MB RAM.

⁵ Including built-in floppy, battery, AC adapter, modem.

⁶ Including black and white.

⁷ <F11> and <F12> are simulated.

Panasonic Business Partner 270

PROS: Inexpensive, fast, light, good keyboard, quick recharge

CONS: Short battery life, poor tech support

Like the clones sold by Grid and Tandy, Panasonic's 16-MHz Business Partner 270 is very fast and highly portable (7.2 pounds), but unlike its siblings, it's also cheap. The downside here is disk space: Panasonic limits you to a 20MB hard disk, which pretty much bars you from running *Windows*. The Business Partner compensates for this, however, with an amazing lowball street price of \$2790. As with all the triplets, text on the paper-white display is a bit soft, and circles turn into eggs.

One thing Panasonic doesn't share with Grid and Tandy is good tech support. We found it almost impossible to reach a technician, and when we *did* get through, the information we got was not entirely accurate. Still, if you can live with only a bit more than 2 hours of battery life, it's hard to resist such a fast 286 notebook at such a low price.

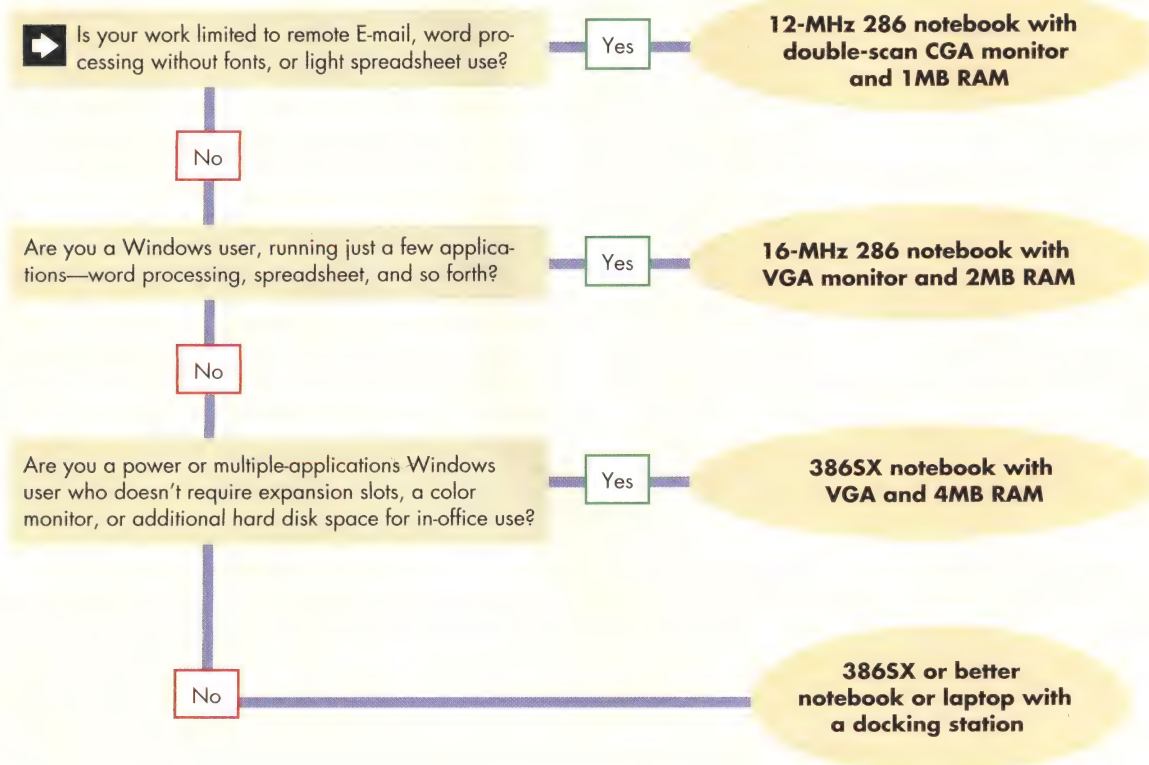


Like the Grid, this 16-MHz system is fast, light, and small. It's also inexpensive—but its biggest disk option is 20MB.

KNOW YOUR OPTIONS

Picking the Proper Portable

You know you want one for the road. Now comes the bewildering part: Should you plunk down \$2500 for a 286, \$3000-plus for an SX notebook, or even more for a machine with a docking station? Use this chart to determine your minimum hardware requirements.



Now you can upgrade without upgrading

An unimpressive report is something you'll never have to create again.

Align titles or text across a range of columns—left, right, or center—with one simple command.

You can wrap text around graphs automatically.

Add freehand drawings or symbols to call attention to critical data.

A feature that only 1-2-3 offers to DOS spreadsheet users is the ability to embed as many "live" graphs on a worksheet as you'd like.

Improved, 3D-effect graphs can add even more impact to your report.

Mix bold, italics, underlines, colors, and typefaces to create over 100 text style combinations—more than any other spreadsheet.

Thanks to Auto Compress, you can easily make an entire report fit on one page.

WeCycle Waste Corporation The Materials Research Group Recommendation: FOCUS: ALUMINUM

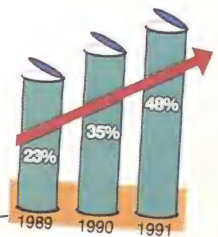
-- Research Group provides the
-- continue to

This stu
basis fo
expand
next 6
proport
during

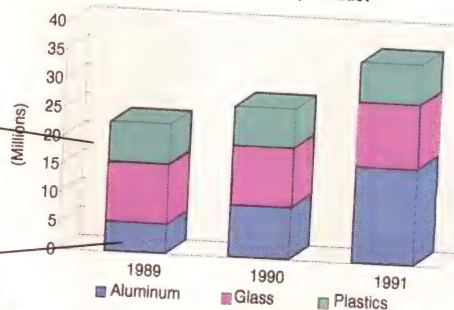
WeCycle Waste Corporation

The Materials Research Group Recommendation: **FOCUS** Aluminum

This study conducted by the Materials Research Group provides the basis for our most recent recommendation that WeCycle continue to expand its aluminum recycling capacity by another 70% over the next 6 years. The graph to the right shows the increasing proportion of our business provided by the aluminum division during the past three years, now approximately half of all revenues. It is our opinion that, at this rate of growth, aluminum recycling will continue to offer our company its greatest opportunity for expansion over the next decade, and certainly into the 21st century.



Gross Revenues by Product



Glass and Plastics

As can be inferred from the graph to the left, glass and plastics recycling has been holding steady throughout this same period, and has consequently become a smaller proportion of our overall sources of revenue.

Although this group would strongly recommend that WeCycle Waste Corporation do all that is necessary to increase its activities in these areas, our studies have shown that aluminum will become increasingly the material of choice in the shipping, heavy manufacturing and container industries.

Aluminum

It is our opinion that sources of aluminum products will be pressed close to their limits over the next decade.

Therefore, we propose that WeCycle Waste Corporation invest in more aluminum capacity during the next five years in order to take the best advantage of this increasing market demand.

WECCYCLE PRODUCT	1989	1990	1991
Aluminum			
East	2,323,426	4,019,527	7,315,539
Central	1,372,347	2,374,160	4,320,972
West	1,726,492	2,986,831	5,436,033
Total	5,422,265	9,380,518	17,072,544
Glass			
East	2,496,721	2,567,821	2,798,925
Central	3,598,757	3,217,693	3,507,285
West	4,217,635	4,471,294	4,873,710
Total	10,313,113	10,256,808	11,179,920
Plastics			
East	2,897,493	3,171,243	3,234,668
Central	1,873,938	1,823,697	1,860,171
West	2,378,942	1,967,421	2,006,769
Total	7,150,373	6,962,361	7,101,608

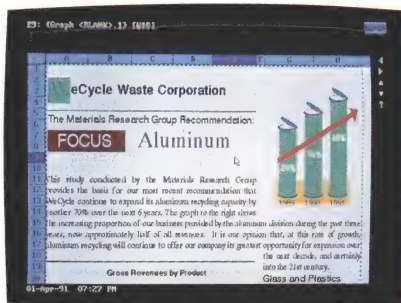
Upgrade your spreadsheet using your hardware.

There's a lot to like about the new Lotus® 1-2-3® for DOS Release 2.3.

For starters, it's not just a graphical spreadsheet. It's a fast, graphical spreadsheet for DOS. It's easy to use. And it works as well on an older XT with just 512K of memory as it does on the newest 486 machine.

It also shares many features in common with our powerful 3D spreadsheet 1-2-3, Release 3.1. Including its superb spreadsheet formatting and publishing capabilities and full mouse support. Along with its popular Auto Compress feature that gives you a trouble-free way of making larger worksheets print on a single page.

We've also added new features you won't find in other spreadsheets. Like



With its WYSIWYG graphical environment, you can do all your formatting "live" on screen.

the Viewer (based on Lotus Magellan® technology) which lets you view files before retrieving them and makes file linking as easy as point and click. And a very helpful Auditor that simplifies the job of documenting and analyzing worksheet logic.

Of course, you won't just like what Release 2.3 does. You'll like how it feels. It's quick and smooth. With a WYSIWYG (what-you-see-is-what-you-get) graphical environment that lets you format text, data, and graphics "live" on screen. With the mouse, you can execute commands, highlight cells or ranges, open dialog boxes, place and size graphs, change type styles, fonts and point sizes. All with unparalleled speed and ease.

What's more, Release 2.3 gives you a wide range of printing and reporting capabilities. Including the capacity to place as many live graphs on a worksheet as you'd like.

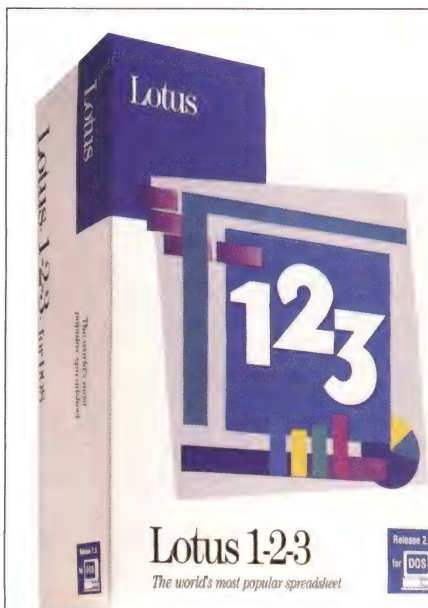
Along with 96 type style combinations, drop shadows, new 3D-effect graphs, drawing and annotation tools, and the most font support, choices of colors and shading available.

Compatibility? As with any 1-2-3 product, it's no problem. Because Release 2.3 will read all of the files you've created on previous versions of 1-2-3, including files you've formatted using Allways™ and Impress™. So you'll preserve all your work, as well as your training.

For more information see your Lotus Authorized Reseller. For a free demo or to order your upgrade directly from Lotus* call 1-800-TRADE-UP, ext. 6079.



Lotus 1-2-3 Release 2.3 runs smoothly and quickly no matter what hardware you're running it on.



What's New In Lotus 1-2-3 Release 2.3.

- A WYSIWYG graphical environment with live on-screen formatting
- Lotus Magellan viewer technology for fast file previewing, retrieving and linking...all without leaving your active worksheet.
- More graph types, including 3D-effect graphs and graph annotation capabilities.
- Auto Compress, for a trouble-free way of making larger worksheets print on single page
- Dialog Boxes for an easier, more interactive way of working
- Text-editing for easy on-sheet word processing, including automatic word wrap, even around graphs
- The Auditor for documenting or highlighting your spreadsheet logic
- Improved memory management for building larger worksheets up to 12 MB in size
- New printer drivers that support all leading laser and dot-matrix printers
- Context-sensitive, interactive Help and an on-line tutorial

*Please have your credit card and product package ready when you call. In Canada, call 1-800-668-1509.



© Copyright 1991 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3, and Magellan are registered trademarks and Impress and Allways are trademarks of Lotus.

The new Lotus 1-2-3 for DOS

Lotus

Best of the Rest

So many machines, so few pages! The table below highlights 22 more contenders fighting for space on your lap.

	List price ¹	CPU speed (MHz)	Size (inches)	RAM capacity (MB)	Largest hard disk option (MB)	Warranty (months)
AST Premium Exec 286	\$2495	12	9.1 x 11.4 x 2.3	8	60	12
A-Tronic SuperLite 286/16	\$1450	12	10.4 x 12.1 x 1.9	4	60	12, 24 ³
Austin 286/12	\$1890	12	9.5 x 12.2 x 2.1	3	40	12
Commax Technologies NT286	\$1795	12	10.5 x 12.0 x 2.0	4	40	12
CompuAdd Companion	\$1995 ²	12	8.5 x 11.0 x 1.4	3	20	12
Core Pacific Ortho LP-286N	\$1999	12	8.4 x 12.0 x 2.9	2	40	12
Dauphin 1000 Lapbook	\$2295	12	11.5 x 12.5 x 2.2	8	60	12
Librex 286	\$3150	12	8.3 x 11.7 x 2.0	4	60	12
Magnavox Metalis/286	\$2699	12	8.5 x 11.0 x 2.1	8	20	12
Mitsuba Ninja Notebook 286	\$2275	12	8.5 x 11.0 x 2.0	8	40	12
Modern Computer NoteStar 902	\$2399	12	9.5 x 12.2 x 1.7	8	40	12
Ogivar Internote 286	\$2999	12.5	10.0 x 12.3 x 2.0	5	20	12
Olivetti Notebook A12	\$2495	12	8.2 x 11.6 x 2.0	5	20	12
Olivetti V16	\$3199	16	8.2 x 11.6 x 2.0	6	40	12
Packard Bell PB286NB	\$3995	12	8.6 x 11.0 x 1.9	8	40	12
Sanyo MBC-17NB	\$2999	12.5	10.0 x 12.3 x 2.0	5	20	12
Sharp-PC 6220  ⁴	\$3199 ²	12	10.8 x 11.0 x 1.4	3	20	12
TI TravelMate 2000  ⁴	\$2369 ²	12	10.8 x 11.0 x 1.4	3	20	12
Toshiba T2000	\$3149	20	10 x 12.2 x 1.9	9	40	12
TRAC 286 Notebook	\$1599	12	10.5 x 12.0 x 2.0	4	40	12
Trans PC LT 2100	\$1700	12	10.0 x 12.0 x 2.0	4	40	12
Zenith MastersPort 286	\$2699	12	8.5 x 11.0 x 2.0	2	30	12

¹ With 1MB RAM, 1.44MB floppy, and 20MB hard disk.
² External floppy drive.

³ 12 months parts, 24 labor.
⁴ October 1990 Best Buy.

WHERE TO BUY

AST Research

16215 Alton Pkwy.
 P.O. Box 19658
 Irvine, CA 92713-9658
 800/876-4278

Reader service no. 612

A-Tronic Computer

15703 E. Valley Blvd.
 City of Industry, CA 91744
 800/888-6118

Reader service no. 613

Austin Computer Systems

10300 Metric Blvd.
 Austin, TX 78758
 800/752-1577

Reader service no. 614

Commax Technologies

2031 Concourse Dr.
 San Jose, CA 95131
 800/526-6629,
 408/435-5000

Reader service no. 615

CompuAdd Corp.

12303 Technology Blvd.
 Austin, TX 78727
 800/627-1967

Reader service no. 616

Core Pacific Electronics

197 Meister Ave.
 Branchburg, NJ 08876
 908/704-8383

Reader service no. 617

Dauphin Technology

1125 E. Saint Charles Rd.
 Lombard, IL 60148
 708/627-4004

Reader service no. 618

Librex Computer Systems

1731 Technology Dr.
 #700
 San Jose, CA 95110
 800/248-4880

Reader service no. 619

Magnavox

Philips Consumer

Electronics

One Philips Dr.
 P.O. Box 14810
 Knoxville, TN 37914-1810
 615/521-4316

Reader service no. 620

Mitsuba Corp.

1925 Write Ave.
 La Verne, CA 91750
 800/648-7822

Reader service no. 621

Modern Computer Corp.

35 Cotters Way, Bldg. C-1
 East Brunswick, NJ 08816
 212/488-5916

Reader service no. 622

Ogivar Technologies

7200 Trans Canada Hwy.
 Ville St.-Laurent
 Quebec, Canada
 H4T 1A3
 800/665-4631

Reader service no. 623

Olivetti Office USA

765 U.S. Hwy. 202
 Bridgewater, NJ 08807
 800/527-2960

Reader service no. 624

Packard Bell

9425 Canoga Ave.
 Chatsworth, CA 91311
 818/773-4400

Reader service no. 625

Sanyo Business Systems

51 Joseph St.
 Moonachie, NJ 07074
 800/524-0047

Reader service no. 626

Sharp Electronics

Sharp Plaza
 Mahwah, NJ 07430
 800/237-4277

Reader service no. 637

Texas Instruments Inc.

P.O. Box 202230

Austin, TX 78720-2230
 800/527-3500

Reader service no. 627

TRAC Int'l Corp.

2552 N.E. Expwy.
 Atlanta, GA 30345
 404/320-6900

Reader service no. 628

Trans PC Systems, Inc.

11849 E. Firestone Blvd.
 Norwalk, CA 90650
 213/868-6930

Reader service no. 629

Zenith Data Systems

2150 E. Lake Cook Rd.
 Buffalo Grove, IL 60089
 800/553-0331

Reader service no. 630

For more information on all products listed here, circle reader service no. 902.



Priced between the virtually identical Grid and Panasonic, the Tandy is fast, light, and tiny—and cursed by short battery life.

Tandy 2810HD

PROS: Very fast, very light, good keyboard, quick recharge

CONS: Expensive, poor battery life

This 16-MHz system—triplet number 3—is just as fast and light as the others and suffers from the same short battery life and elongated screen. At \$3499, it's about \$800 less than the Grid but costs \$700 more than the Panasonic. Tandy, which actually builds the triplets, puts the identical (excellent) keyboard in all three. You get dedicated cursor keys in an inverted T, dedicated page control keys, and 12 function keys. Plus (as with all three), there's a special screen touch: Instead of using a slider to adjust brightness, which always seems to slip out of adjustment, you set a handy three-position switch.

Tech support is available fast from a central number or your local Radio Shack store, but it misses a perfect support score because one of our questions was answered incorrectly. Overall value: three stars—a good buy.

PC WORLD TEST REPORT

New 16-MHz Notebooks Deliver Top Speed

The 16-MHz clones beat the 12-MHz contenders but still can't match a 386SX notebook.

WordPerfect

Tandy 2810HD	121
Grid 1720	122
Panasonic 270	122
NEC UltraLite 286F	129
Dell System 212N	147
Compaq LTE/286	150
Zeos Notebook 286	157
Toshiba T1200XE	191

seconds 0 40 80 120 160 200

dBASE IV

Tandy 2810HD	1157
Grid 1720	1158
Panasonic 270	1166
Dell System 212N	1353
NEC UltraLite 286F	1497
Toshiba T1200XE	1539
Compaq LTE/286	1570
Zeos Notebook 286	1573

seconds 0 315 630 945 1260 1575

Methodology

The notebooks had 3MB RAM and 20MB hard disks, except the NEC UltraLite, which had 2MB RAM, and the Compaq, which had 2.6MB RAM.

WordPerfect 5.1

We reformat three documents varying from 5K to 55K. The files are text with boldface and underlining; one document includes a TIFF image.

dBASE IV 1.1

With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

1-2-3

Grid 1720	1695
Panasonic 270	1695
Tandy 2810HD	1696
Dell System 212N	2198
Zeos Notebook 286	2267
NEC UltraLite 286F	2288
Toshiba T1200XE	2398
Compaq LTE/286	2407

seconds 0 485 970 1455 1940 2425

Paradox

Grid 1720	898
Panasonic 270	898
Tandy 2810HD	921
Dell System 212N	1053
Toshiba T1200XE	1063
Zeos Notebook 286	1102
Compaq LTE/286	1159
NEC UltraLite 286F	1325

seconds 0 265 530 795 1060 1325

1-2-3

We load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We perform various changes and recalcs on each.

Paradox

Starting with an orders table, we compare each record with an available stock table. The application finds the current price for the items and inserts the resulting record into an invoice table.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Toshiba T1200XE

PROS: Large screen, crisp display, good keyboard, expansion chassis available

CONS: Poor performance, heavy, large, short battery life

This aging pioneer needs an upgrade. Its slow performance and 9.8-pound traveling weight will drag you down, and it's the largest machine in the roundup. Also, the Toshiba's ergonomics leave a lot to be desired: An awkward latch makes it hard to open, and adjusting brightness or contrast requires pushing and twisting two tiny disks. Moreover, the notebook's battery life is surprisingly short for its weight.

The good news is that you get both a well-designed keyboard with a desktop feel and a nice big screen. The CGA graphics are somewhat old-fashioned, but the T1200XE's double-scan text is still fabulously crisp. Tech support could be faster, and we were given misinformation about battery charging technique. How does it all add up? The Toshiba was a smart buy only a few years ago, but times have changed, and you can do better.



Reasonably priced, with a fine keyboard and a crisp display, this veteran notebook is also heavy and fairly slow.

EXECUTIVE SUMMARY

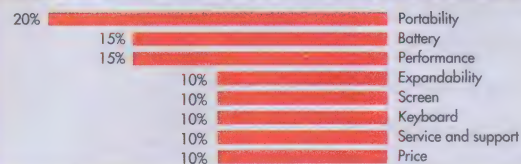
Dell's Traveling Light Show

Light and long-lasting, Dell's System 212N lifts the weight of your work load from your shoulders.



Because you're the one who has to carry it, it might as well be the Best Buy **Dell System 212N**. Affordable, long on battery life, and backed by superb support, this 12-MHz Dell is the best 286-based notebook on the market. However, if speed is crucial, you might move to one of the near-identical 16-MHz models from Grid, Panasonic, or Tandy. The triplets are fast but can't last long away from the power plug.

Key Buying Issues: Percentage of Importance



	Reader service no.	Portability	Battery	Performance	Expandability	Screen	Keyboard	Service and support	Price	Overall value
Dell System 212N	605	★★★★	★★★★ ½	★★★★ ½	★★★★ ½	★★★★	★★★★	★★★★	★★★★	★★★★ ½
Compaq LTE/286	604	☆☆☆	☆☆☆ ½	☆☆ ½	☆☆ ½	☆☆ ½	☆☆ ½	☆☆☆ ½	☆☆☆ ½	★★★★
Grid 1720	606	☆☆☆ ½	☆☆	☆☆☆☆	☆☆☆☆	☆☆☆	☆☆☆ ½	☆☆☆ ½	☆☆	★★★★
NEC UltraLite 286F	607	☆☆☆	☆☆ ½	☆☆☆ ½	☆☆ ½	☆☆ ½	☆☆ ½	☆☆☆ ½	☆☆☆☆	★★★★
Panasonic Business Partner 270	608	☆☆☆ ½	☆☆	☆☆☆☆	☆☆ ½	☆☆☆	☆☆☆ ½	☆☆ ½	☆☆☆ ½	★★★★
Tandy 2810HD	609	☆☆☆ ½	☆☆	☆☆☆☆	☆☆ ½	☆☆☆	☆☆☆ ½	☆☆☆ ½	☆☆	★★★★
Zeos Notebook 286	611	☆☆ ½	☆☆☆	☆☆☆	☆☆☆☆	☆☆☆☆	☆☆ ½	☆☆☆	☆☆☆☆	★★★★
Toshiba T1200XE	610	☆	☆☆ ½	☆☆	☆☆☆ ½	☆☆☆	☆☆☆ ½	☆☆☆	☆☆☆	★★★ ½

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.



“I can do what?”

Ami Pro 2.0 Brings Visual Word Processing to Windows.



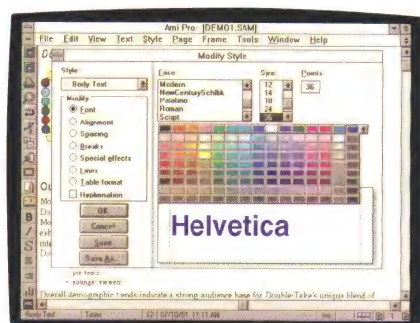
What separates Ami Pro™ 2.0 for Windows™ from every other word processor in the world? The ability to create documents the way you think, with words, pictures, graphs, symbols, drawings and colors.

We call it Visual Word Processing, and it's the fastest, easiest and most direct way to get what's on your mind on paper.

With Visual Word Processing,

complicated keystroke commands are a thing of the past. You work directly

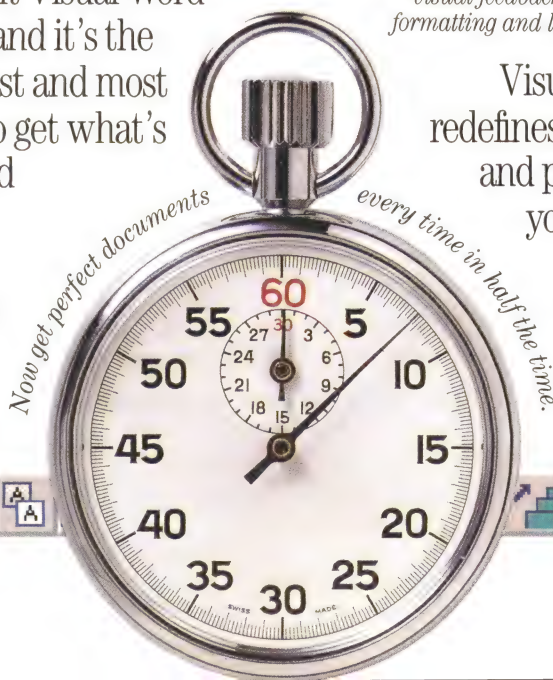
on-screen with SmartIcons™ that give you one-click access to every word processing feature you need or want—from basic commands to your customized procedures.



Interactive dialog boxes give you immediate visual feedback on all your formatting and layout options.

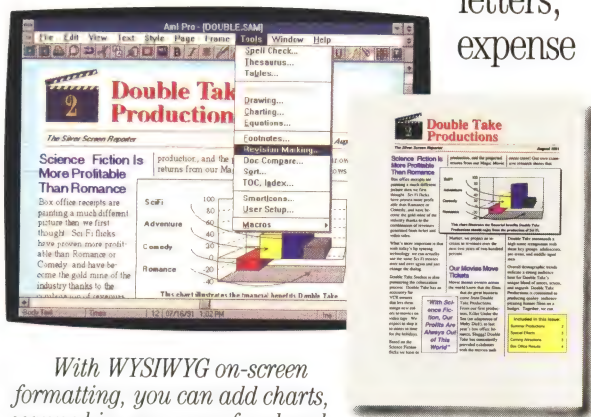
Visual Word Processing not only redefines the way you work with words and pictures, it redefines the way your finished work looks.

Since Ami Pro is the only word processor designed from the ground up to work



exclusively with the Windows environment, you can now take full advantage of all the rich graphic capabilities of Windows. You get true WYSIWYG that lets you edit in any view, and print out at anytime, whether you're zoomed in or zoomed out on the page.

Ami Pro even comes with two dozen pre-formatted Style Sheets so you can get professionally designed letters, expense



With WYSIWYG on-screen formatting, you can add charts, scanned images, even free-hand drawings, then wrap text around any graphic you want.

reports, memos, reports and presentations as fast as it takes you to type in your text.

Visual Word Processing with Ami Pro 2.0 even redefines power word processing. Such features as spell check,

Ami Pro gives you an almost limitless combination of type sizes, styles and colors.

thesaurus, a full macro language, two way DDE support, merge, tables, variable view levels and integrated drawing and charting are all part of the package. And of

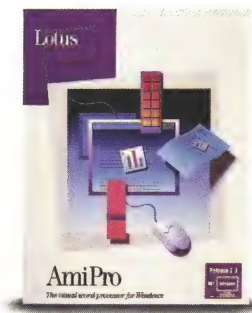
course, Ami Pro 2.0 reads and writes all other word processing file formats.

Naturally, Ami Pro 2.0 is integrated with the entire suite of Lotus® Windows applications. In fact, you have the ability to launch into two of the world's leading business applications: 1-2-3® and cc:Mail™, right from Ami Pro.

But see Ami Pro 2.0 for yourself. If you're currently a word processing user and would like to upgrade to Ami Pro 2.0 for only \$129, or for a free working model, call **1-800-TRADEUP, ext. 6020.**

"Beg or borrow time on a system running Ami Pro, and you'll soon see what a word processor should be... It's the Best Buy for Windows users."

—PC World (6/91)



No other word processor can bring your words to life on paper like Ami Pro 2.0 for Windows.

Introducing Ami Pro 2.0 for Windows



In Canada, Call 1-800-668-1509. © 1991 Lotus Development Corporation. All rights reserved. Lotus and 1-2-3 are registered trademarks of Lotus Development Corporation. Ami Pro is a trademark of Samna Corporation, a wholly owned subsidiary of Lotus Development Corporation. Windows is a trademark of Microsoft Corporation. cc:Mail is a trademark of cc:Mail, Incorporated, a wholly-owned subsidiary of Lotus Development Corporation. SmartIcons is a trademark of Lotus Development Corporation.



9 to 5.



Evenings & weekends.



Printers for people who want to look as good at home as they do in the office.

When you put your ideas on paper, they have to make a great impression. And that's a given, with either of these two new Panasonic® printers. Because both offer the impressive value and performance you'd expect from the people who make the industry's best-selling 24-pin printer.*

The KX-P1124i, the office model, gives you 11 built-in fonts, including Super Letter Quality for an exceptionally professional appearance. You also get the versatility of bottom, front and rear paper paths. 300 cps draft speed. And a new LCD display on the EZ™ Set control panel that takes "user friendly" to a new level. For the price, there isn't another printer on the market that even comes close.

The KX-P1123 brings home nearly the same capabilities, at a price that's even more affordable. It has 7 fonts, three paper paths, EZ Set front panel, and 240 cps draft speed. Plus a new automatic microline feed that makes paper loading a cinch.

The Panasonic KX-P1124i and KX-P1123. Two very good reasons to see your Panasonic dealer very soon. And see for yourself why our strongest impression is value. A phone call to 1-800-742-8086 will bring you more information.

*Printers, Computers, Peripherals,
Copiers, Typewriters and Facsimiles*

Panasonic
Office Automation 

* The Panasonic KX-P1124. Based on US dollar share of competitive models for the 12 months ending December, 1990, as reported by InfoCorp. (1/91).

P6-PCD

Circle 231 on reader service card



This machine has lots to like: a 60MB disk option, a big screen, and a decent price—but it's a bit large and heavy.

Zeos Notebook 286

PROS: Low price, large screen, crisp display, fast recharge, 60MB disk option
CONS: Heavy, large, short battery life, emulated page keys

If price is a priority, and you want a big screen to make presentations look their best, then the \$2682 Zeos Notebook 286 is your best choice. Not only is its shapely screen the largest in the roundup, it renders circles free from distortion, and text is crisp and sharp. On the downside, this notebook is one of the largest and heaviest of the bunch; and the keyboard could be better—page keys are emulated, and the touch is soggy.

Tech support is fast, and available 24 hours a day, seven days a week—but while two questions were answered correctly, we were misled about installing a 287 coprocessor until we got the technician to ask his supervisor. The Notebook 286's nice price and super screen make it ideal for sales reps who depend on good-looking presentations, but check out the keyboard and heft before you buy. ☹

WHERE TO BUY

Compaq LTE/286

Compaq Computer Corp.
 P.O. Box 692000
 Houston, TX
 77069-2000
 800/231-0900,
 713/374-1740 (fax)
 LIST PRICE: with 640K
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter
 \$2499; with 40MB
 hard disk \$2799
 ACCESSORIES: 1MB
 RAM \$349, 2MB
 \$699, 4MB \$1499;
 battery pack \$129;
 2400-baud MNP-5
 modem \$369; DOS
 3.31 \$120, DOS 4.01
 \$150

Reader service no. 604

Dell System 212N

Dell Computer Corp.
 9505 Arboretum Blvd.
 Austin, TX
 78759-7299
 800/937-1470,
 512/338-8700 (fax)
 LIST PRICE: with 1MB
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter,
 DOS 4.01 \$2518; with
 40MB hard disk
 \$2818

ACCESSORIES: 1MB
 RAM \$149, 2MB RAM
 \$249; battery pack
 \$80; 2400-baud
 MNP-5 fax-modem
 \$399

Reader service no. 605

Grid 1720

Grid Systems Corp.
 47211 Lakeview Blvd.
 Fremont, CA 94538
 800/222-4743,
 415/683-0903 (fax)
 LIST PRICE: with 1MB
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter,
 2400-baud modem,
 DOS \$3495; with
 60MB hard disk
 \$3995

ACCESSORIES: 2MB
 RAM \$790; battery
 pack \$100

Reader service no. 606

NEC UltraLite 286F

NEC Technologies, Inc.
 1414 Massachusetts
 Ave.
 Boxborough, MA
 01719
 800/632-4636,
 800/343-4418
 (Massachusetts,
 Canada)
 LIST PRICE: with 1MB
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter,

DOS, utilities \$2799
 ACCESSORIES: 1MB
 RAM \$499, 4MB RAM
 \$1749; battery pack
 \$129; 2400-baud
 MNP-5 fax-modem
 \$699

Reader service no. 607

Panasonic Business Partner 270

Panasonic
 Communications and
 Systems Co.
 Two Panasonic Way
 Secaucus, NJ 07094
 800/742-8086
 LIST PRICE: with 1MB
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter,
 DOS \$3199
 ACCESSORIES: 2MB
 RAM \$738; battery
 pack \$99; 2400-baud
 modem \$199

Reader service no. 608

Tandy 2810HD

Tandy Corp.
 Radio Shack Division
 1800 One Tandy
 Center
 Fort Worth, TX 76102
 817/390-3011
 LIST PRICE: with 1MB

RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter,
 VGA card, DOS
 \$2499
 ACCESSORIES: 1MB
 RAM \$400; battery
 pack \$100; 2400-
 baud MNP-5 modem
 \$200

Reader service no. 609

Toshiba T1200XE

Toshiba America
 Information Systems,
 Inc.
 9740 Irvine Blvd.
 Irvine, CA 92718
 800/334-3445,
 714/587-6034 (fax)
 LIST PRICE: with 1MB
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter,
 DOS \$2299; with
 40MB hard disk
 \$2599
 ACCESSORIES: 2MB
 RAM \$1099; battery
 pack \$79; 2400-baud
 MNP-5 modem \$449

Reader service no. 610

Toshiba T2000

(See "Best of the Rest"
 sidebar)

Reader service no. 740

Zeos Notebook 286

Zeos Int'l, Ltd.

530 5th Ave. NW
 St. Paul, MN 55112
 800/423-5891,
 612/633-1325 (fax)
 LIST PRICE: with 1MB
 RAM, 20MB hard disk,
 1.44MB floppy, battery
 pack, AC adapter
 \$1995; with 3MB
 RAM, extra battery and
 external charging
 stand, carrying case,
 DOS \$2495; with 5MB
 RAM, 2400-baud
 modem \$2895
 ACCESSORIES: 2MB
 RAM \$349, 4MB RAM
 \$649; 40MB hard disk
 \$245, 60MB hard disk
 \$495; extra battery
 pack \$89; 2400-baud
 modem \$219; DOS
 \$119

Reader service no. 611

For more information about all products in this article, circle reader service no. 901.

Portable Printers: The Next Generation

Six portable printers bring the mobile office closer to reality.

TJ Byers



Think you can't take your printer anywhere? Meet the Seikosha, Kodak, and Canon portables.

Thanks to a new breed of light, battery-powered peripherals—hard disks, fax-modems, pocket LAN adapters, and road mice—you can hit the trail with most of your desktop computing power intact. And now, finally, the last piece is falling into place: Portable printers let you generate on-the-spot purchase orders, contracts, insurance policies, itineraries, even plain-paper faxes, no matter how far you are from the power socket. The only serious problem is speed. Except for Mannesmann Tally's premium-priced MT 735, you're looking at 3 to 5 minutes per page!

The six printers examined here—two dot matrix, two ink jet, two thermal—vary in size, weight, price, features, and output quality. But all of them

print on cut sheets, two handle fanfold paper as well, and one lets you install a paper roll. Unfortunately, none of them comes with a carrying case. Here's a quick look. The weights include battery and charger.

Axonix LiteWrite

If you're looking for an inexpensive way to add portable printing to your life, the 9-pin dot matrix LiteWrite has one big advantage: This \$449 printer is one of the cheapest portables you can buy. It's also the only one that handles single sheets, fanfold, and roll paper. Unfortunately, it's also among the heaviest and bulkiest units: 8.5 pounds and 7.5 by 13 by 3 inches. Output is legible but hardly letter quality, and the 240-dpi graphics

aren't presentation quality. Printing a full page of text takes about 3 minutes.

Canon BJ-10e

Canon's 7-pound "bubble jet" is the most popular portable printer on the market. And no wonder: Output quality (both NLQ text and 360-dpi graphics) is almost as good as a laser's, thanks to its 24-nozzle printhead, and the fast-drying ink eliminates smearing. The BJ-10e's \$499 list price is easy to take, too, and its whisper-quiet operation is another plus. Minuses? At 8.5 by 12 by 2 inches, it's fairly bulky. Also, it handles only one sheet at a time, but you can get an optional 100-sheet feeder for \$90. Print speed is 3 minutes per page.

CP+ WsP-200

If rock-bottom price, tiny profile, and low weight top your priority list, the \$400 WsP-200 may be the portable of your dreams. This 4.75-pound, 9-pin thermal printer is the cheapest, smallest—6.75 by 11.5 by 1.5 inches—and one of the lightest printers in the roundup. But there are some serious trade-offs. It's quite slow: around 5 minutes for a page of text. It requires special thermal paper that's not only expensive (11 cents a sheet) but also hard to find. And you have to insert the paper by hand, one sheet at a time. Print quality for text and 180-dpi graphics is only draft quality.

Kodak Diconix 150 Plus

Is your briefcase too heavy already? Then consider the \$519, 4.5-pound Diconix 150 Plus, the lightest portable printer available today. Its svelte 6.5-by-10.75-by-2-inch dimensions are quite impressive too. The Diconix's 9-nozzle ink jet output and 192-dpi graphics are excellent, though hardly in a class with a LaserJet's. But you'd better not be in a hurry: Printing a full page of text can take as long as 5 minutes. The unit lets you feed single sheets through a rear slot, or you can use the built-in tractor drive for fanfold paper.

Mannesmann Tally MT 735

The MT 735 is a world-class machine but with a high price (and weight) to match. Its thermal-film transfer technology produces gorgeous text and 300-dpi graphics that are fully the equal of a laser printer's. Nonetheless, it's surprisingly small—8.5 by 11 by 2 inches—and its speed is outstanding: 20 seconds per page. It holds 50 sheets of paper, and

its LaserJet II emulation gives you access to the entire family of HP soft fonts. But if you *must* have output this good, you'll pay \$1295 for the privilege—and you'll have to schlepp around 10 pounds of heavyweight hardware.

Seikosha LT-20

If you can think of better things to do with your time than feeding sheets into

your printer one by one, the \$499 LT-20 is for you. A built-in copierlike tray holds 50 sheets of paper, and you can refill it without stopping the printer. Moreover, text and 260-dpi graphics are both quite good. The bad news? This 24-pin dot matrix monolith is the biggest of the bunch—11.25 by 14.5 by 2 inches—and adds 8 pounds to your load. And it dawdles at 5 minutes per page.

WHERE TO BUY

Axonix LiteWrite

Axonix Corp.
1214 Wilmington Ave.
#201
Salt Lake City, UT
84106
800/866-9797,
801/485-6204 (fax)
Reader service no. 631

Canon BJ-10e

Canon U.S.A., Inc.
1 Canon Plaza

Lake Success, NY
11042
800/848-4123,
516/354-5805 (fax)
Reader service no. 632

CP+ WsP-200

Computer Products
Plus, Inc.
16351 Gothard St.
Huntington Beach, CA
92647

800/274-4277,
714/848-6850 (fax)
Reader service no. 633

Kodak Diconix 150 Plus

Eastman Kodak
Company
Printer Products
Division
901 Elmgrove Rd.
Rochester, NY 14653
800/344-0006
Reader service no. 634

Mannesmann Tally MT 735

Mannesmann Tally
Corp.
8301 S. 180th St.
Kent, WA 98032-0413
800/843-1347,
206/251-5520 (fax)
Reader service no. 635

Seikosha LT-20

Seikosha America Inc.
10 Industrial Ave.

Mahwah, NJ 07430
800/338-2609,
201/818-9135 (fax)
Reader service no. 636

For more information about all products in this sidebar, circle reader service no. 903.

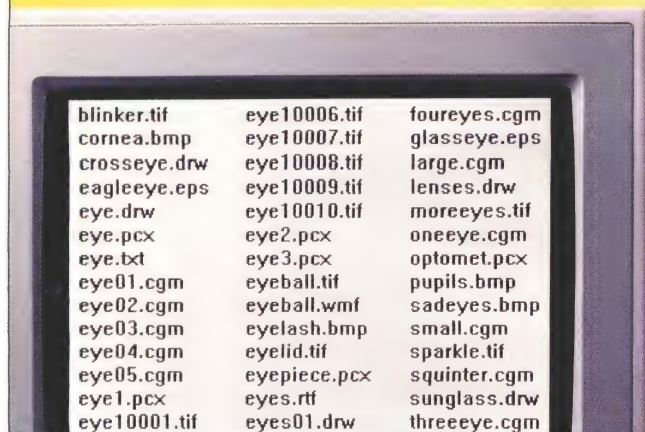
How would you rather hunt for an image?

Scrapbook+™ for Microsoft® Windows™ lets you see the images you've stored, so you don't have to guess your way through long lists of cryptic filenames to find what you need. You can store hundreds of images with multiple formats in a single Scrapbook+ file... view them in seconds as thumbnails or full size... and then quickly place them into your documents. Don't waste another minute playing hide-and-seek with your images. Call 800/727-2793 for your local dealer.

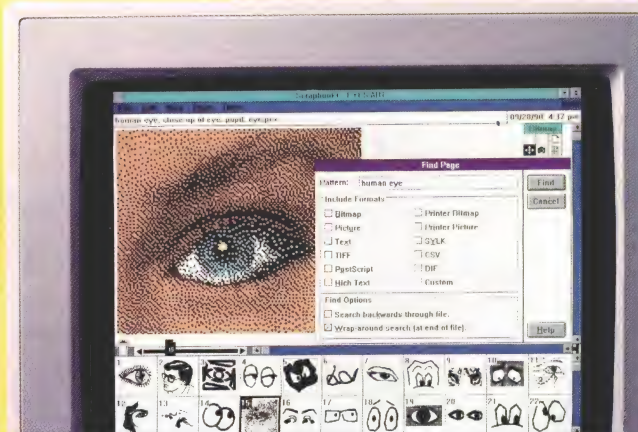
EIKON

© 1990 Eikon Systems, Inc., 989 E. Hillside Blvd., Suite 260, Foster City, CA 94404

The old way.



The Scrapbook+ way.



Circle 82 on reader service card

NOTEBOOK COMPUTERS ARE INCREDIBLY LIGHTWEIGHT.

UNFORTUNATELY, SO IS MOST OF THEIR SERVICE AND SUPPORT.

Of course, this doesn't hold true when you're talking about the Dell® 320N. Sure, it's definitely light—a mere 6.4 pounds and it easily fits in your briefcase. But that's the only thing lightweight about it.

Service, service, and more service. You see, the Dell 320N comes with the service and support for which we've won PC Week's Corporate Satisfaction Poll for PCs, laptops and servers. An unprecedented 8 times.

And Dell has also just been ranked the best personal computer in J. D. Power and Associates' first ever Customer Satisfaction Index for PCs in Small to Medium Sized Businesses.SM

And if you need help, call our toll-free technical support hotline where 90% of reported problems are solved right over the phone, usually in six minutes or less. Or if you use our

innovative

TechFaxSM line,

we'll fax you back

Dell system

information immediately. But if the

problem still isn't solved, a trained technician will be sent to your hotel room or office by the next business day.^Δ

With a replacement system if necessary. And if possible, your hard drive contents will be transferred on the spot. The first year of on-site service is included in the price of your system.

Heavyweight features in a lightweight system. The Dell 320N comes with features you'd normally expect in a heavier laptop model. It has a 3.5" floppy drive, an extended travel keyboard with separate cursor keys (Home, End, Page Up, Page Down), special screen navigation keys, and a high quality VGA LCD. You can choose a 40 or 60 MB hard drive, an optional built-in fax modem, and it has a sliding door that lets you easily insert a math coprocessor or extra RAM modules.

You'll also get Dell's "Continuous

Power Battery

System" which

lets you replace

the battery without

leaving your software application

HERE'S THE SUPPORT YOU'LL GET:

- ~ Toll-free technical support hotline for the life of your system.
- ~ One full year of on-site service included in the system price.^Δ
- ~ Self-diagnostic software.
- ~ Toll-free 24-hour TechFax line for instant access to Dell technical information.
- ~ On-line Bulletin Board to communicate with Dell technical staff and other Dell users.

or turning off the system.

For sale, for lease, for less. When you call us, we'll help you decide on a perfect system and offer you a variety of financial products that can be tailored to meet your business needs. Every Dell system comes with a 30-day satisfaction guarantee. So if you aren't happy with it, you can return it for a full refund, no questions asked.

So give us a

call today.

And ask

for the lightweight computer

that's heavy on

the service and

support.

TO ORDER, CALL, PLEASE REFERENCE #11D44

800-289-1180

HOURS: 7 AM-9 PM CT MON-FRI. 8 AM-4 PM CT SAT.

IN CANADA 1-800-668-3021. IN MEXICO 95-800-010-0664.



*Performance Enhancements: Within the first megabyte of memory 96 KB of memory is reserved by the system to enhance performance. Can be optionally disabled. All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. **Payment based on 36-month, open-end lease. Δ Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell is a registered trademark and TechFax is a service mark of Dell Computer Corporation. 1386 is a trademark of Intel Corporation. 1991 J. D. Power and Associates' Computer End User Satisfaction Study, Phase I: Office Based Small to Medium Sized Businesses. Responses from Business End Users at 1,784 business sites. Small to Medium Sized Businesses were based on office sites with between 1 and 499 employees. Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. J. D. Power and Associates is a service mark of J. D. Power and Associates. Other trademarks and trade names are used to identify entities claiming the marks and names of their products. Dell Computer Corporation disclaims any proprietary interest in trademarks or trade names other than its own. Service provided by Third Party Provider. On-site service may not be available in certain remote locations. Shipping, handling, and applicable sales tax not included in the price. For information on and a copy of Dell's 30-day Total Satisfaction Guarantee, limited warranty, and Third Party Provider Service Contract, please write to Dell USA Corporation, 9505 Arboretum Boulevard, Austin, Texas 78759-7299, ATTN: Warranty. © 1991 Dell Computer Corporation. All rights reserved.



\$3399 Lease*: \$127/Mo**
The Dell 320N 20MHz i386™ SX
system includes VGA LCD,
40 MB Hard Drive, 1 MB RAM.

ROOM SERVICE

ROOM
1529

— When you just can't wait, JustWrite. —

IT WRITES SO FAST, IT'LL RATTLE YOUR WINDOWS.



Finally, a word processor that's as fast and efficient as you are. Introducing JustWrite™, the fastest, easiest word processor you can buy for Windows™ 3.0.

JustWrite is built for speed and efficiency, with all the features you need. Features like time-saving document templates, effortless mail merge, spell checker, and thesaurus. Plus a selection of easy-to-use advanced features, including

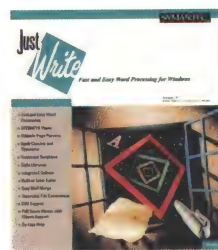
a table editor, built-in outline, DDE support, and integrated graphics to make impressive looking documents easier than ever.

And JustWrite's automatic file conversion lets you transparently import and export documents with Microsoft® Word, WordPerfect® and other popular word processors.

So stop wasting time with your old word processor, and start rattling Windows

with JustWrite, the Windows word processor from Symantec.

Just call **1-800-228-4122**, Ext. 113W for a free demo disk.



SYMANTEC.

Outside N. America call (408) 252-3570. © 1991 Symantec Corporation. JustWrite is a trademark of Symantec Corporation. All other products or brand names listed are trademarks or registered trademarks of their respective holders.

Circle 271 on reader service card

Spreadsheets: Beyond Number Crunching

Today's top spreadsheets help you manage your work from beginning to end, from what-if analysis all the way to polished reports and presentations. Will 1-2-3, Excel, Quattro, SuperCalc, or Wingz meet your needs best?

Richard Scoville



Want it short and sweet? Yes, *Excel 3.0* really is as good as they say. It may well be the best application running on PCs today. Not only does it succeed as a capable number cruncher, but it helps you every step of the way, from planning your spreadsheet to analyzing information to printing out dazzling reports and graphics. At the same time, it elevates spreadsheet ease of use to a remarkable new level.

If you're moving to *Windows*, you'll probably want to buy *Excel*. But what if you don't crave *Windows* or lack

the equipment to run it? What if you, like the vast majority of spreadsheet users, have already sold the farm (not to mention your macros and add-ins) to 1-2-3? Tough times may have reduced your department's training and support budget, so an upgrade path that's easy and cheap may prove enticing. Should you stick with the latest versions of the tried-and-true 1-2-3 or retrain users to master the greater glory of *Excel*?

Tough questions. And to make matters more complicated, here comes 1-2-3 for *Windows*. Too late for review

here but due to ship in late summer, it should pose formidable competition to *Excel* (see the sidebar "1-2-3 for Windows: Same as It Ever Was").

For now, however, *Excel* wins the only Best Buy. If you're DOS bound, version 2.3 of 1-2-3 and *Quattro Pro 3.0* are good choices, and if you're an advanced user in a 1-2-3 shop, 1-2-3 3.1+ gives you the power of *Excel*, though without its polished interface.

What a Spreadsheet Should Be

Today, a winning spreadsheet program needs a split personality: First, it must be simple enough for managers to crank through routine tasks such as producing departmental budgets and expense reports—if the program isn't easy to handle, only the spreadsheet jockeys will be able to ride it. Second, it must provide the organizational and analytical tools and the programmability that power users and developers need.

In putting these six spreadsheets

through their paces, we considered the programs' suitability to five major user categories: managers, corporate budget makers, financial analysts and forecasters, scientific and technical users, and application developers.

All these users get their due here, but our evaluation is skewed toward that vast majority of spreadsheet users—managers. These folks use their spreadsheet to calculate expense reports, make simple financial projections, maintain small departmental budgets, and generate reports. For them, ease of use is everything, as are capable fonts, formatting tools, and graphics for creating handsome reports.

Some managers must handle and consolidate a number of budgets. For these corporate budgeteers, the emphasis is on formula links, multisheet consolidation, and other tools used to tie together multiple worksheets. Financial analysts and forecasters have yet another agenda—here, of prime importance

are tools for spotting trends and sophisticated graphics for presenting them.

We didn't forget the many scientific, engineering, and other technical users of the world—these users demand top-notch statistics, a broad spectrum of graph types, and high-end mathematical features. Finally, we judged the programs as development environments, where data management and programmability are the critical features.

Ideally, a program weaves all these features into an intuitive, accessible interface that lets you get the job done simply and quickly. And today, the product that comes closest to that ideal—especially for managers—is *Excel 3.0*.

Richard Scoville, who writes the column Spreadsheets (A..Z), is a contributing editor for PC World.

For more information about all products in this article, circle reader service no. 905.

1-2-3 release 2.3

PROS: Smooth interface, good publishing features

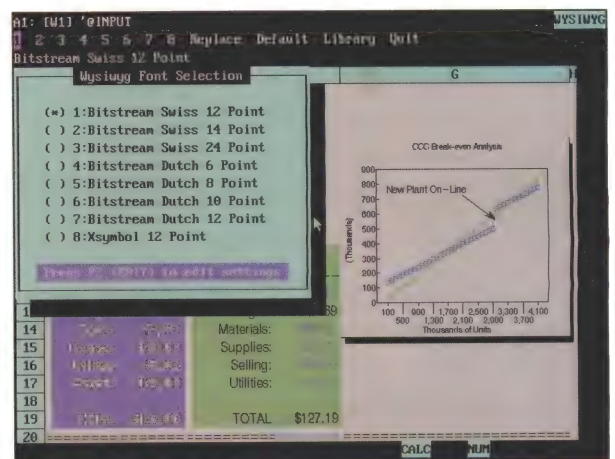
CONS: Limited analytical, data base, and file linking tools

For current 1-2-3 users, the path of least resistance is—surprise!—1-2-3 2.3. This new release of the perennial best-seller is enhanced with a slick, graphical WYSIWYG interface and hot new publishing features. Yet 1-2-3's menu tree has sprouted even more branches with which to confuse novices, and Lotus has kept the feature set fairly primitive so as not to crowd the high-end 1-2-3 release 3.1+. If you're using an 8088 or 286 machine, the logical choice is between 1-2-3 2.3 and *Quattro Pro*. Release 2.3 is a fairly good deal, but it can't quite match *Quattro*.

The new mousable interface is a winner, and unlike *Excel*, 1-2-3 runs just fine on an 8-MHz or 12-MHz 286. The dialog boxes make setting up worksheets easy, and the program's format-

ting styles, redefinable font palette, and cell borders let you generate polished reports quickly.

Creating a budget? Release 2.3 can handle the basics, but its impoverished file linkages will impede construction of more complex models. For financial analysis and projections, you'll have to forgo solver technology and make do with the most limited graph options in this roundup. Engineers and scientists should walk right past 2.3's limited modeling features and go straight to release 3.1+. Application developers may want to stay put with 1-2-3's time-tested macro system. They can easily update 2.2 worksheets and create applications that will work in any 1-2-3 re-



With 1-2-3 release 2.3, WYSIWYG comes to the masses. Applying fonts and formatting reports is now easier.

lease. But developers will probably be disappointed with the extremely limited data base features.

Upgrading to 2.3 is a solid, conservative move: There's no need for retraining or expensive new hardware, and you get crowd-pleasing fonts and printing. Just don't let your employees get a look at *Excel*!

Buying Smart: In Search of the Perfect Spreadsheet

Most users rate ease of use, decision support, and presentation features as key factors in choosing a spreadsheet. The much smaller segment of power users and application developers will seek depth in programmability and data management.



EASE OF USE

If you're a novice, you'll appreciate a mouse-controlled WYSIWYG interface and logically organized menus. Novices and pros alike can benefit from features like Excel 3.0's innovative tool bar, automatic column widths, and ability to edit an object by double-clicking on it. Good documentation and on-line help are also essential.

Consider how the program performs in the hands of a skilled user. Does it offer lots of shortcuts, hot keys, and speed-up features such as formatting styles and reports?

Finally, how well does the program work with your existing applications? All these programs can read 1-2-3 release 2.2 worksheets but not all run 1-2-3 macros without modification.



DECISION SUPPORT

Look for the ability to sort columns, insert ranges, and assign cell and range notes—all helpful tools for constructing worksheets. The ability to paste functions in formulas can speed calculations.

If you're building a budget with multiple worksheets, you'll want to be able to save an entire work space of related files as a single application. You'll also want point-and-shoot formula linking, so you won't have to guess cell or range addresses when linking formulas from

different worksheets.

Advanced users will want a solver, which lets you work backward from an assumption to see how it affects other variables. Analysts forecasting trends will also want regression analysis, which tells you the degree to which one variable can be predicted from another's value. Developers will need user-definable functions to provide customized functions for their users and applications.



PRESENTATION

For impressive reports, consider a graphical interface that shows what your output will look like as you work. And a page preview allows you to visualize how elements such as page margins and print ranges will appear on the entire page.

For easy printing, look for auto-compression, which automatically shrinks a print range onto a single page. Your program should also indicate the boundaries of the print range on the spreadsheet, making it easier to format multipage reports.

For graphics, you'll want to be able to plot plenty of variables on a single graph. You'll also want to be able to draw directly on a chart or worksheet. An on-screen slide-show generator could save you the price of a presentation graphics program.



PERFORMANCE

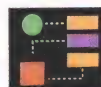
Our benchmarks are split into four groups to reflect real-world applications. Most users' work profiles will match the basic arithmetic models, but corporate budget makers should check out the consolidation models, analysts and forecasters will relate to the financial model, and scientific and en-

gineering users should focus on the scientific model.



DATA MANAGEMENT

All the programs offer the basic data management features. But only a few offer the advanced features needed by power users, who must find, organize, and analyze raw data from a variety of sources, including other worksheet files or external data bases. High-end users will want relational queries and calculated output fields.



PROGRAMMABILITY

All the programs allow sophisticated programming. While most of the programs offer 1-2-3-style keystroke macros, Excel employs a function-based macro system, and Wingz has a traditional programming language. Macro mavens should look for the ability to issue DOS commands and execute macros with the mouse.



PRICE

Most of these packages are around \$500. All the programs are networkable, but because most users run their spreadsheets off their own PCs, our prices refer to the cost of a single package.



SERVICE AND SUPPORT

Technical support should be both quick and accurate. To test service and support, we called each vendor three times, asked questions of varying technical complexity, and noted the timeliness and accuracy of their answers. We also factored in support policies, such as hours, toll-free lines, and BBS and fax support.

FEATURES EVALUATION

Excel Excels—But Others Have Talents Too

Best Buy Excel 3.0 is a snap to use and stacked with features, while 1-2-3 3.1+ gives you multipage worksheets and 3-D range names, and Quattro Pro 3.0 packs spreadsheet power into older systems.

- Yes
 ○ No
 ◐ Deficient
 ▼ Limited only by available memory

	1-2-3 release 2.3	1-2-3 release 3.1+	Excel 3.0	Quattro Pro 3.0	SuperCalc 5.0	Wingz 1.1A
Standard features						
Price	\$495	\$595	\$495	\$495	\$149	\$499
Network file locking	●	●	●	●	●	●
RAM required	384K ⁴	1MB	2MB	640K	512K	2MB
Virtual memory management	○	●	●	●	○	●
Movable, sizable windows	○	○	●	◐ ⁵	○	●
Undo multiple operations	○	○	●	●	○	○
Print in background	●	●	●	○	○	●
File viewer	●	●	●	○	○	○
Decision support						
Sort by columns	○	○	●	○	●	○
Insert/delete range	○	○	●	○	●	◐ ⁶
Select, change multiple ranges	○	○	●	○	○	●
Select range for multiple operations	●	○	●	○	○	●
Outliner	○	○	●	○	○	○
Cell and range notes	○	●	●	◐ ⁷	○	○
Trace formula references	●	●	●	○	●	●
Password-protect worksheet structure	○	●	●	○	○	○
Solver: multivariable linear	○	●	●	●	○	○
Solver: multivariable nonlinear	○	●	●	○	○	○
Multipage worksheets	○	●	●	○	●	○
3-D ranges	○	●	●	○	○	○
Auto-consolidation	○	○	●	○	○	○
Save work space	○	○	●	●	○	○
Point-and-shoot formula linking	●	●	●	●	●	○
Hot links to other applications	○	◐ ⁸	●	◐ ⁹	○	●
Define range name with external referent	○	○	●	●	○	○
External graph ranges	○	●	●	●	○	○
Linear regression	●	●	●	●	●	●
Curvilinear regression	○	○	●	○	●	◐ ¹⁰
Arrays	○	○	●	○	○	○
User-definable functions	◐ ¹¹	◐ ¹¹	●	○	○	●
Paste function in formula	○	●	●	●	○	●
Reads/writes DBF (dBASE III)	◐ ¹²	◐ ¹²	●	●	●	○
Reads/writes comma-delimited ASCII	◐ ¹³	◐ ¹³	●	◐ ¹³	●	○
Presentation						
Automatic column width	○	○	●	●	○	○
Justify numeric data	○	○	●	●	●	●
Variable row height	●	●	●	●	○	●
Restrict cell entry to text	○	●	●	●	●	○
User-definable formats	○	○	●	○	◐ ¹⁴	●

BEST
BUY

	1-2-3 release 2.3 ¹	1-2-3 release 3.1 ²	Excel 3.0 ³	Quattro Pro 3.0 ⁴	SuperCalc 5.0 ⁵	Wingz 1.1A ⁶
Presentation (continued)						
Copy formatting to another cell	●	●	●	○	○	●
Mousable WYSIWYG interface	●	●	●	●	○	●
Zoom	●	●	●	●	○	●
Text boxes	●	●	●	○	○	●
Save named reports	○	●	●	○	○	○
Set attributes independent of font	●	●	●	○	○	●
Formatting styles	●	●	●	○	○	○
Auto-compress print range	●	●	●	● ¹⁵	○	○
Print multiple ranges per page	●	●	●	● ¹⁵	○	○
WYSIWYG page preview	●	●	●	●	○	●
Display print range border	●	●	●	● ¹⁶	○	●
Draw within graphic	●	●	●	●	○	●
Draw on spreadsheet	○	○	●	○	○	●
Dual y-axes	○	●	●	●	●	●
Mixed graphs (line/bar)	●	●	●	●	●	●
True 3-D graphs	○	○	●	● ¹⁷	○	●
On-screen slide show	○	○	●	●	○	○
Number of graph variables	6	6	255	6	10	▼
Data management						
Data entry forms	○	●	●	○	○	○
Extract records from closed file	○	●	●	●	○	○
Relational queries	○	●	●	○	○	○
Calculated query fields	○	●	●	○	○	○
External data base links	○	●	● ¹⁸	● ⁹	○	● ¹¹
Programmability						
Macro library	●	●	●	●	●	●
Execute macro with mouse button	○	○	●	●	○	●
DOS command access from macro	●	●	●	●	○	●
Debugger/trace	●	○	●	●	●	●
Reads/writes 1-2-3 2.2 macros	●	●	●	●	○	○
Service and support						
Daily support (hours)	24	24	12	11	10	8
Unlimited free support	●	●	●	●	○	●
Toll-free support number	● ¹⁹	● ¹⁹	●	○	○	●
Weekend support	●	●	●	○	○	●
BBS support	●	●	●	●	○	○
Fax support	●	●	●	●	●	○
Other extra-cost training or support	●	●	●	●	●	○

W Indicates Windows product.

¹ 1-2-3 2.xx won a World Class Award in October 1989 and October 1990.

² Excel 2.1 won a Best Buy in October 1989.

³ Quattro Pro 1.0 won a Best Buy in April 1990.

⁴ For character mode; 512K required for WYSIWYG.

⁵ Character mode display only.

⁶ Shift cells right only; can't shift cells down.

⁷ Cell notes only.

⁸ Timed only; no on-demand refresh.

⁹ Paradox only.

¹⁰ Quadratic curve only; fit in graphs only.

¹¹ Extra-cost option.

¹² Requires translation utility.

¹³ Reads only.

¹⁴ Highly restricted selection of formats.

¹⁵ Not on PostScript printer.

¹⁶ In preview only; not in interactive edit mode.

¹⁷ Line, bar only.

¹⁸ DBF and SQL via Q+E only.

¹⁹ Three months from first call only.

BEST
BUY

1-2-3 for Windows: Same as It Ever Was

Want the power of 1-2-3 3.1+ combined with the fluid interface of Excel? Then take a look at 1-2-3 for Windows, an icon-studded jewel of a spreadsheet that also helps out old-time 1-2-3 veterans by providing optional slash-key menus.

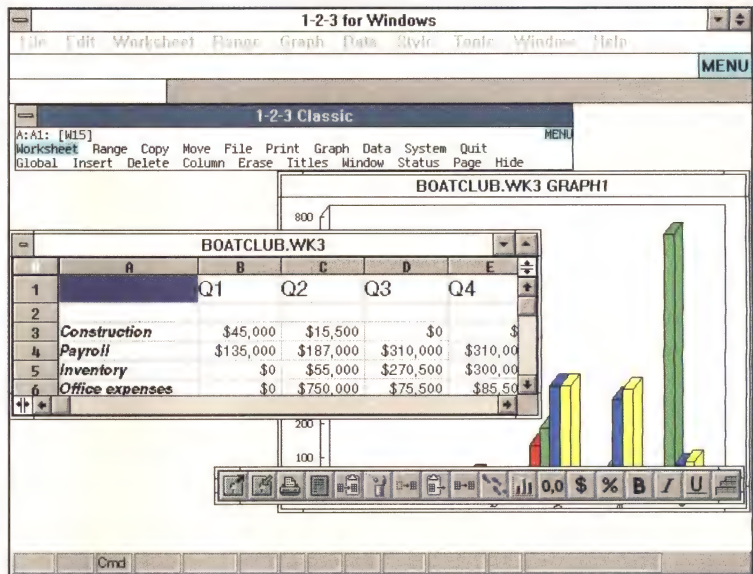
Last month we took a good long look at a beta version of 1-2-3/W, but at last report the shipping version wasn't due until late summer. If you're waffling between moving to Excel and waiting for 1-2-3/W, that doesn't do you much good. But here's a hint of what you can expect.

1-2-3 for Windows provides all the features of 1-2-3 release 3.1+—including 3-D worksheets and a non-linear solver—dressed up with a stunning Windows interface. The highlight is a customizable icon palette that makes Excel's static tool bar look somewhat dowdy. You can put as many as 70 icons in the palette or display just a few, and you can resize the rectangular palette and float it anywhere on screen. The icons provide one-click access to various formatting and calculation functions—in fact, you can tie any menu item or macro to an icon.

If the icon palette provides the flash, 1-2-3/W's 1-2-3 Classic menus deliver the slash. These optional menus let you use your old slash-key commands—and the macros that depend on them—so you don't have to master 1-2-3/W's new interface right away. The result: instant productivity for 1-2-3 users moving to Windows.

Beyond WYSIWYG

Like 1-2-3/W, the two new character-based versions of 1-2-3 reviewed here are WYSIWYG, letting you view formatting and graphics as they'll print—and without having to switch



1-2-3 for Windows' Classic menu provides an entree for veteran users, but the new "icon palette" is the interface of the hour.

to a static print preview. But 1-2-3/W is clearly in another league. For example, gone are 3.1+ and 2.3's labyrinthine menus, schizoid print commands, and patchwork add-ins. They're replaced by a cleanly integrated system of pulldown menus, dialog boxes, and icons.

The interface itself just looks and feels better. Lotus did a fairly good job on the 3.1+ and 2.3 interfaces, but when you set them side by side with 1-2-3/W or Excel, the fonts, borders, and shading look blocky and immature. Also, dialog boxes are few and far between and lack the Windows tricks found in 1-2-3/W—3-D radio buttons, scroll bars, and drop-down pick lists, for example.

Of course, this is more than a beauty contest—all those pleasing screen objects are also valuable tools that can greatly reduce the time and effort required to generate stylish reports. And thanks to Windows' consistent interface, once you learn

1-2-3/W, learning other Windows applications will be much easier. Additional Windows benefits include quick access to fonts, top-notch printer support, multitasking, and data sharing between programs.

1-2-3/W may be an improvement over other versions of 1-2-3, but can it top Excel? The answer to that question awaits a shipping version, but the initial impression is that Excel has a slight edge on ease of use. 1-2-3/W's icon palette is a great time-saver, but even more important may be Excel's numerous shortcuts, including the ability to open a dialog box just by double-clicking on a screen object such as a chart. And features like Excel's outliner and auto-consolidation can also save you a lot of time and aggravation.

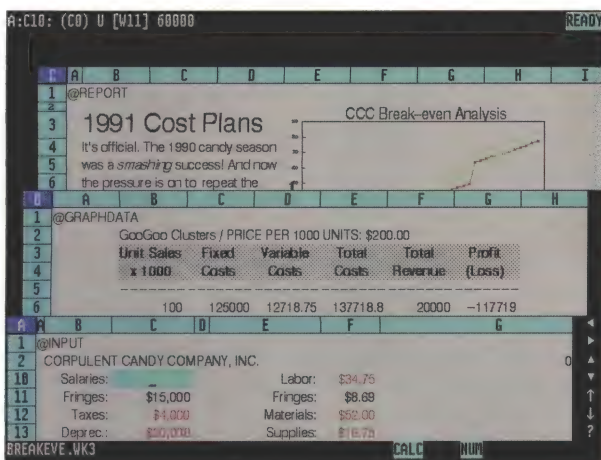
Still, 1-2-3/W's trump card is its 1-2-3 Classic menus. The allure of switching effortlessly between the new interface and the old slash-key commands will be hard to resist.

1-2-3 release 3.1+

PROS: 3-D and multipage worksheets, powerful data base features

CONS: Complex menu structure

If you're attached to 1-2-3 but your worksheets are starting to outgrow it, check out the powerhouse release 3.1+.



The powerful 1-2-3 release 3.1+ is a whiz at linking multiple worksheets.

This new "+" release consists of a set of add-ins to 3.1: the auditor and the file viewer from 2.3 and the solver from the OS/2-based 1-2-3/G.

Developers, analysts, and technical users will appreciate the multipage worksheets, 3-D modeling, refined data base and file linking, and nonlinear solver.

Controlling all that power is a distinct challenge, however—it's easy to lose yourself in the endlessly branching menus. Still, 3.1+ is a good value if you demand advanced features.

1-2-3 3.1+'s graphical interface is almost identical to 2.3's, but because there are more features, each is harder to find. As with 2.3,

the menus split into traditional 1-2-3 menus and a separate set of publishing menus. The good news: Release 2.x users can get started easily, then explore the new menus later. The bad news: Exploring the profusely branching menus may be more of an adventure than you had in mind.

Budget builders will enjoy plenty of power, including multipage worksheets and versatile interfile formula links. Analysts can work with a powerful nonlinear solver and build 3-D data models, but they won't find 3-D graphs among the wide selection of chart types. Developers will revel in the rich relational data base system, which offers links to external data bases, macro-driven data entry forms, and screen painting.

If you're a 1-2-3 aficionado who requires top-notch analytical tools, you'll crave 1-2-3 3.1+'s cornucopia of nifty new gadgets. But if you're a busy business user who just wants to get the job done, check out *Excel*.

Excel 3.0

PROS: Easy interface, outliner, potent solver and data base features

CONS: No multipage worksheets



WINDOWS Forget your mixed impressions of earlier versions of

Microsoft's *Excel*. Version 3.0 deserves another look even if you weren't planning on moving to *Windows*. The program combines impressive analytical and data handling features, full programmability, and dazzling presentation skills. But the real story behind *Excel*'s Best Buy victory is its utterly intuitive interface.

Excel is easy to learn and phenomenally easy to use. You'll seldom grope for the controls—often you can double-click on an object to make the dialog box that controls it appear. *Excel*'s hot keys, tool bar, formatting styles, and other concessions to the frailties of human memory will save you a lot of time.

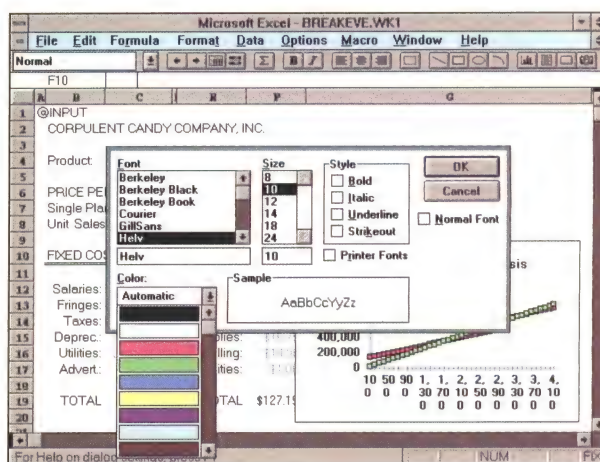
Excel's automatic file consolidation,

based on row and column labels rather than cell addresses, is a magical solution to the budget builder's age-old problem of summarizing data from multiple worksheets. You can build formulas or charts that utilize ranges in other files, so you won't run out of gas when your budget grows complex.

Analysts can use *Excel*'s robust solver

to find optimal solutions to complex scenarios, then graph the results. Engineers and scientists may wish for 3-D ranges, however, as well as a few more graph types.

After mastering *Excel*'s thorny macro language, developers can devise efficient multifile applications. A dialog box editor and beefed-up data base com-



Excel 3.0's icon bar provides quick access to common features such as font selection.

mands help make *Excel* the best development environment of the group. Better yet, Microsoft bundles *Q+E*, which offers fully relational links to *dBASE*, *Paradox*, and other data bases.

Excel demands power: at least a 286 with 2MB of RAM. But if your hardware is up to it, *Excel* is too. It's the Best Buy for just about everybody.

What's Your Line?

A spreadsheet is a spreadsheet, right? Wrong. It may also be a data manager, a desktop publisher, a graphics program, a project manager, or a statistics application. What type of user are you? We've highlighted five typical groups of spreadsheet users below and point you to the features—and programs—you'll want. We've also indicated the tests that you should focus on in the PC World Test Report.

Managers

This is by far the largest category of spreadsheet users. It includes casual users who use a spreadsheet as a scratch pad, text-oriented users who want a spreadsheet for table layout features, executives who want to automate their expense reports, and administrators who maintain small departmental budgets or prepare simple reports. Ease of use and spreadsheet publishing are critical. **Key features:** WYSIWYG interface, formatting styles, print preview, auto-compress print range, automatic column width **Key tests:** arithmetic model **Recommendation:** Excel, Quattro Pro

Corporate Budget Makers

Budgeting often involves collecting data from several departments (or from all over the company) and reducing it in successive stages to form a coherent financial picture. Speed and organizational features are the main buying issues. **Key features:** auto-consolidation; movable, sizable windows; work space save; point-and-shoot formula linking; multipage worksheets; outliner; 3-D ranges; speed **Key tests:** consolidation model **Recommendation:** Excel, 1-2-3 3.1+, Quattro Pro

Financial Analysts and Forecasters

These spreadsheet jockeys play the what-if game in a big way. They build complex formulas, so recalculation speed is important. They want to display results graphically, and hardware costs are not an issue. **Key features:** nonlinear solver, linear regression, user-definable functions, many graph types and variables, speed **Key tests:** financial model **Recommendation:** Excel, 1-2-3 3.1+

Scientific and Technical Users

Engineers, scientists, and technical users of all types store empirical data, perform statistical analyses, build complex graphs, and prepare complex mathematical models. **Key features:** nonlinear solver, linear regression, many graphic types, arrays, relational queries, speed **Key tests:** scientific model **Recommendation:** Excel, 1-2-3 3.1+

Application Developers

Developers build worksheets for others to use. They need good programming features, and a WYSIWYG interface helps them create attractive, custom input screens. Since many custom applications are for data collection, data base features are important, and compatibility with a variety of data types helps to port applications between programs. **Key features:** macro library and debugger, mouse-button macros, WYSIWYG interface, external file links, file and macro compatibility **Key tests:** arithmetic model **Recommendation:** Excel, Quattro Pro

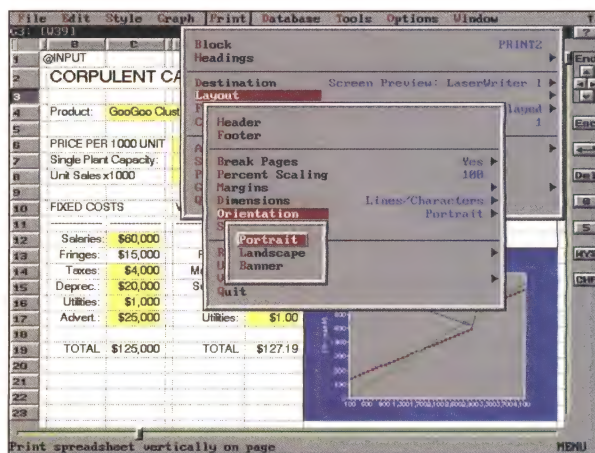
Quattro Pro 3.0

PROS: Fast, runs on 8088 PCs, excellent graphics, full compatibility with 1-2-3 2.2

CONS: Lacks format styles, can't resize windows in new graphical mode

If you're frustrated with 1-2-3's menus, if you often create graphics, or if you need hot links to *Paradox*, consider Borland's *Quattro Pro 3.0*. It provides superb graphs, solid desktop publishing features, and a flashy new interface. It's a good value, but the lack of formatting styles and other shortcuts keeps it from the top.

Quattro's optional new graphical interface (you can switch back to the mousable character mode) looks sharp enough, but it's somewhat harder to work with than the 1-2-3 versions reviewed: As with the 1-2-3s (but unlike *Quattro Pro's* character mode), you can't move or resize



Graphics make Quattro the top choice in non-Windows spreadsheets.

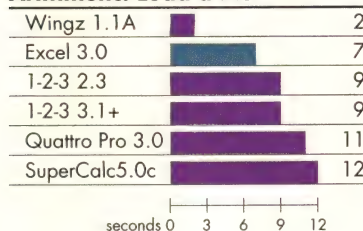
PC WORLD TEST REPORT

Photo Finish at the Top

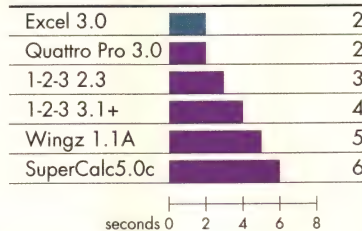
With Excel, Quattro Pro, Wingz, and both versions of 1-2-3 all making strong showings in the speed department, factors like ease of use and specific abilities become the key buying issues.

■ Best Buy

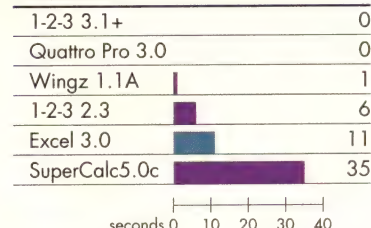
Arithmetic: Load a file



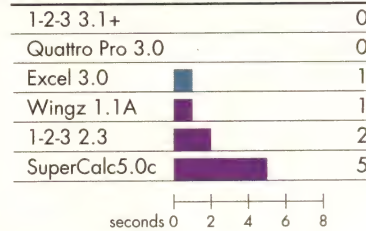
Arithmetic: Full recalc



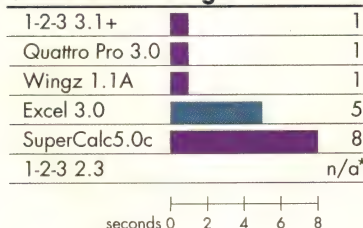
Financial



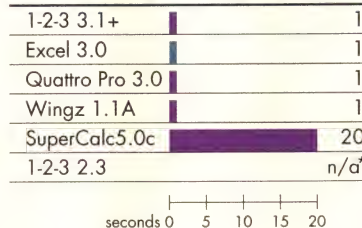
Arithmetic: Partial recalc



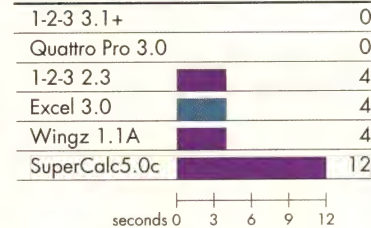
Consolidation: Page oriented



Consolidation: File oriented



Scientific



* 1-2-3 2.3 can't have multiple worksheets in RAM.

Methodology

We ran our tests on a Compaq 386/25 with 4MB RAM and a 110MB hard disk and used background-recalc mode where possible.

Financial

We run recalcs on a 360-month variable-rate loan.

Arithmetic

We load a worksheet with 253 months of assets and liabilities and do a full and a partial recalc. In the latter, only the affected cells recalculate.

Consolidation: Page oriented

We place the overall totals of ten worksheets in an eleventh and measure recalc time.

Consolidation: File oriented

We pull values from seven worksheets loaded in

RAM and consolidate them in an eighth.

Scientific

We construct a 37-by-37-cell dual-variable distribution matrix and define the maximum and minimum values for both variables. We give a correlation coefficient, change it, and measure recalc time.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

windows. Nor can you view the boundaries of print ranges in the interactive editing mode. Also, the screen refresh is slow (though that problem should be solved in version 3.01). The graphical mode may be a bit sluggish, but behind the scenes *Quattro* is the fastest program in the roundup on a 386 PC.

Scratch the surface beneath the graphical interface, and *Quattro*'s logical menus are easier to learn than *1-2-3*'s menus, where unrelated commands congregate too often. *Quattro* also has you create <Ctrl>-key combinations that can skip several levels deep

in the menu tree to oft-used commands. For reporting, the program shares *1-2-3*'s excellent fit-to-print option, which helps you print large ranges on a single page. But *Quattro* lacks *1-2-3*'s formatting styles, report templates, and multiple range selection, which can make report creation tedious at times.

Graphics are *Quattro*'s forte: You can choose from a variety of graphs and enhance them with superb drawing tools. You can export images to 35mm slides or assemble an on-screen slide show complete with wipes, dissolves, hypertext links—even sound effects.

Budgeteers will find the file linking equal to *Excel*'s: You can have multiple files share data through linked formulas, and save those files as a group. Analysts will appreciate the graphics, but they'll probably give up on the solver, which lacks nonlinear solutions and as-sails you with complex math lingo.

If you have an 8088 or low-end 286 machine, your choice is probably between *1-2-3 2.3* and *Quattro Pro*. The decision is not as clear as it was prior to release 2.3, but *Quattro* is still the way to go, especially if you use *Paradox* and if you frequently create graphics.

Now that it's such a popular E-mail program, maybe we should call it Post Office.



When WordPerfect Corporation created WordPerfect Office,[™] we set out to simplify the way people organize their days, schedule their meetings and communicate with their colleagues. In short, to streamline many of the most common day-to-day tasks in any office environment. And that's exactly what WordPerfect Office can do.

But meanwhile, it's also become the fastest-growing E-mail package for PCs.

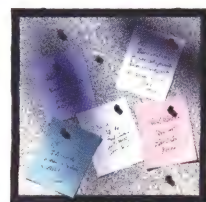
And that seems only natural. Because WordPerfect Office lets you quickly and easily send documents,



memos and schedules to the "in-boxes" of everyone on your mailing list—across the hall, across the street, wherever they're connected to WordPerfect Office.

Plus, WordPerfect Office has gateways that allow you to communicate with many other kinds of E-mail systems—MCI, AT&T Easylink and MHS, for instance.

And unlike most E-mail packages, WordPerfect Office organizes your messages in "in-boxes" and "out-boxes" and lets you check their status anytime. If you've sent a message that has not yet been read, for example, you can retrieve it and make changes. You can even delete the message completely, as though it had never been sent.



WordPerfect OFFICE™

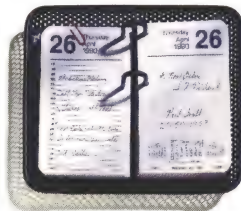
Office Automation Software
for IBM® PC Networks



So why didn't we call it "Post Office"? Because WordPerfect Office isn't limited to just E-mail. WordPerfect Office includes such useful functions as a calendar, a calculator, and a file manager. And its scheduler program lets you coordinate and schedule people and resources efficiently, avoiding conflicts and endless back-and-forth telephone tag.

What's more, you can count on WordPerfect Office to have all the familiarity, ease-of-use and incomparable user support you've come to enjoy in WordPerfect.®

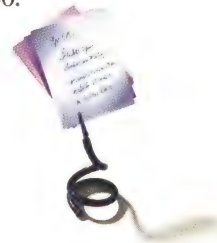
Maybe it's because WordPerfect Office can do so many things so well that *InfoWorld* chose it as



"Office Automation Product of the Year for 1990."

So if you want the PC's fastest-growing E-mail package—and you don't mind getting some really great additional features—just call (800)-526-5031 for a free demo diskette or a WordPerfect Office brochure. Or, if you prefer, send a message to MCI 4478847 or AT&T Easylink 62024736.

You'll not only be getting a better post office, you'll be getting a better office.



WordPerfect
CORPORATION

1555 North Technology Way, Orem, Utah 84057
Tel: (801) 225-5000 FAX: (801) 222-5077

WordPerfect is a registered trademark and WordPerfect Office is a trademark of WordPerfect Corporation in the United States and other countries. All other brands and product names are trademarks or registered trademarks of their respective companies.
© 1991 WordPerfect Corporation.

SuperCalc5.0c

PROS: Low price, flexible editing, multipage worksheets, statistical graphics

CONS: Slow; awkward interface; no preview; no solver

In present company, Computer Associates' *SuperCalc5.0c* is a bit of a relic. Its character-based interface lacks on-screen graphics and print preview, its publishing skills are negligible, it has no solver, and its file linking is limited. It's also the slowest performer in the pack. A rock-bottom \$149 price tag is alluring, but *SuperCalc* is still only a fair value. Its only real niche: bargain hunters who have an 8088 or low-end 286 PC but want top-notch statistical features and multipage worksheets.

It's fairly easy to do basic editing in *SuperCalc*—you can sort by columns or rows and copy cells with or without formula adjustment—but beyond that you'll bog down. The overwhelming menu system derives from the 1-2-3 tree

model, but it's even more confusing. You get basic publishing features such as cell borders, shading, and multiple fonts, but the lack of a WY-SIWYG interface or even a print preview makes them difficult to use.

Budget specialists will be frustrated by *SuperCalc*'s linking system, which lets you construct a multipage worksheet, but won't let you build 3-D ranges. You can construct formulas that link to another page or file, but you must type in the external range addresses or names from memory.

On the plus side, analysts and technical users will like *SuperCalc*'s graphs, which offer polar coordinates and curve

CORPULENT CANDY COMPANY, INC.	
Product: GooGoo Clusters	
PRICE PER 1000 UNITS:	\$260.00
Single Plant Capacity:	3,000
Unit Sales x1000	100
FIXED COSTS	
Salaries:	\$60,000
Fringes:	\$15,000
Taxes:	\$4,000
Deprec:	\$20,000
Utilities:	\$1,000
adver.:	\$25,000
TOTAL	\$125,000
VARIABLE COSTS	
Labor:	\$34.75
Fringes:	\$8.69
Materials:	\$52.00
Supplies:	\$16.75
Selling:	\$14.00
Utilities:	\$1.00
TOTAL	\$127.19

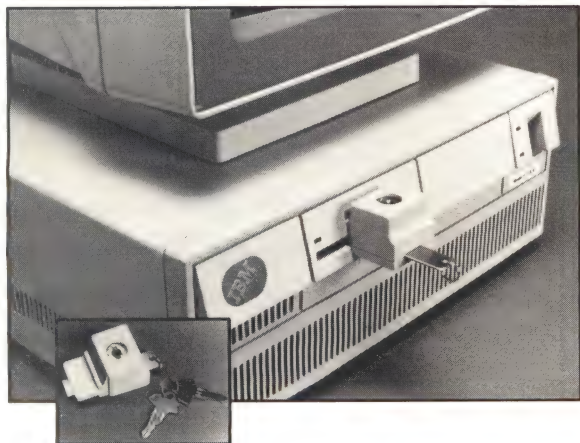
Width: 11 Memory: 5762 Last Col/Row: W110
READY F1:Help F3:Names Ctrl-Backspace:Undo Ctrl-Break:Cancel NUM:CALC

Once upon a time, all spreadsheets looked like this. *SuperCalc5.0c* remains true to the old character-based approach.

fitting. The program also earns high marks at statistical analysis and graphics, such as linear, quadratic, and cubic regression.

Fortunately, an overhaul of *SuperCalc* is in the works. Until then, unless you have a special need for *SuperCalc*'s statistical talents, look elsewhere.

DISK DRIVE LOCK™ PROTECT THE INFORMATION YOU DEPEND ON!



- Prevent anyone from copying your data.
- Protect your data from harmful viruses.
- Prevent the unauthorized use of your drive.
- Installs easily and quickly - just lock it on.
- Removes easily and quickly

Universal model DLK-250 - Fits most 5 1/4" & 3 1/2" drives.
Macintosh models DLK-260 & DLK-261 fit all Mac drives.

Quantity pricing available. Purchase orders accepted. Send for catalog.
Dealer inquiries invited. Shipping not included.

Secure-It, Inc. 18 Maple Ct. East Longmeadow, MA 01028 **\$24.95**
1-800-451-7592 MC/VISA

Circle 31 on reader service card

Protects while you type!



- Remains in Place while you use your computer.
 - Avoids Costly Repairs. Protects delicate electronics from dust, spills, smoke, ashes, staples.
 - Soft, Flexible, retains normal keyboard feel.
 - Washable, Durable High-Tech Polymer lasts years.
 - Hundreds of Models. SafeSkin is available for most PCs, laptops, workstations and clone keyboards.
 - Office • Home • Factory • Classroom • Laboratory
- List Price \$29.95. Please call or write for free color brochure. Dealer inquiries encouraged.

SafeSkin®
KEYBOARD PROTECTOR

Merritt Computer Products, Inc.
5565 Red Bird Center Dr., Suite 150 • Dallas, Texas 75237
(214) 339-0753 • FAX (214) 339-1313

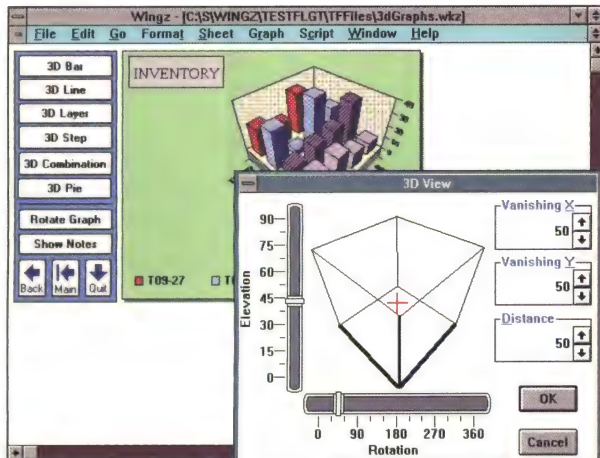
Circle 217 on reader service card

Wingz 1.1A

PROS: Superb graphics, highly programmable

CONS: Weak file linking, few shortcuts, limited data base features

WINDOWS Wingz is a great idea that never quite took off. Concentrating



If you hate to remove your hand from the mouse, you'll love Wingz. Sliding bar controls provide access to superb graphics.

on presentation, it includes a draw program and a spectacular lineup of graphs. It's a fairly good value if you churn out a lot of graphics, but its relatively weak mainstream spreadsheet features make it look immature next to its Windows rival *Excel*.

As in *Excel*, you can draw directly on the worksheet and insert notes in text boxes, but you'll be slowed by the lack of formatting styles and keyboard shortcuts, and a general overreliance on the mouse. For instance, to paste a range name in a formula, you must make two menu choices, click a radio button, select a name from a list, and click on *OK*. Printing requires a

lot of trial and error—you can't see page breaks or auto-compress a report to a single page.

Wingz's weak file linking skills make complex budgets a chore. You can't use the mouse to build a linking formula, and the program links work only when both files are open. Analysts will like the regression and matrix commands but will have to do without a solver.

If you're a BASIC or dBASE programmer, you'll feel right at home in Wingz's BASIC-like Hyperscript language. But developers should be wary of the limited data base talents and poor 1-2-3 compatibility.

You may forgive Wingz its shortcomings in order to savor its superb graphics. You get fantastic 3-D graphs, including polar coordinates and surface and contour charts.

Wingz will satisfy business graphics fans, but spreadsheet jockeys will find it disappointing. Most Windows users should choose *Excel* instead. ☹

Give Us Your Toughest Peripheral Sharing Problem

...or your simplest! Master Switch, the intelligent data switch from Rose Electronics, can handle it. The Master Switch series is so versatile and sophisticated, peripheral sharing becomes easy.

Anyone who appreciates ease-of-operation and technologically-advanced capabilities knows the Master Switch is the right choice...for sharing printers, plotters, modems, and any device with a serial or parallel port. Here's why:

- Any combination of serial or parallel ports
- Easy selection of peripherals
- User-expandable memory up to 4 megabytes
- Simultaneous access to all devices
- Rated 'fastest switch' by PC Magazine
- Advanced features include job queue, port contention, data collection, job control menu, initialization strings, pop-up menus, and many more
- Complete technical support; one-year warranty

The Low-Cost LAN Alternative

With our MasterNet software, the Master Switch provides many convenient LAN functions, such as E-mail, file transfer, and directory access.

Designed and manufactured in the USA. Field-proven in thousands of applications. The Master Switch answers any peripheral sharing challenge. Choose the intelligent data switch that handles your most complex needs, yet is easy to set up and operate... choose Master Switch.



(800) 333-9343

FAX (713) 933-0044 • (713) 933-7673
P.O. Box 742571 • Houston, Texas 77274
Call for complete information and our catalog of Switching and Sharing Solutions.
Dealer inquiries welcome.



The TI TravelMates. They're making a hit coast to coast.



The new look of power.

Editors across the country are praising the performance, size and weight of the Texas Instruments TravelMate™ 2000 and 3000 notebook computers.



"The TravelMate is as close as you can get to the ultimate portable." — *BYTE*, November 1990.





"Now TI assumes the lead in performance/pound/price measure of a notebook." —

PC Magazine, December 11, 1990.*

"Not until you hold this computer in your hands do you begin to understand what sets it apart from the pack." —



PC Computing, December 1990.**

Both TravelMate models are only 8½" x 11" in size, including a hard disk drive,  and feature a 10" diagonal  VGA display and comfortable full-function keyboard.

With the TM 2000 you get 286™ processing in a computer

that's 1.4" thin and 4.4 lbs. light. The TM 3000, meanwhile, packs 20MHz 386™ SX power into a mere 1.8" and 5.7 lbs.



Find out how to take the new look of power with you coast to coast. Or wherever your work takes you.

For the name of the dealer nearest you, call 1-800-527-3500.


**TEXAS
INSTRUMENTS**

TravelMate is a trademark of Texas Instruments Incorporated. 286 and 386 are trademarks of Intel Corporation. *Reprinted from *PC Magazine*, December 11, 1990. Copyright © 1990 Ziff Communications Company. **Reprinted from *PC Computing*, December 1990. Copyright © 1990 Ziff Communications Company. TravelMate 2000 has earned the following awards: 1990 *PC Magazine* Editor's Choice Award (October 16, 1990); 1990 *PC Magazine* Award for Technical Excellence; *BYTE* Award of Excellence; 1990 *PC World* Best Buy. TravelMate 3000 has earned the following awards: 1990 *PC Computing* Most Valuable Product; 1990 *BYTE* Award of Merit.

EXECUTIVE SUMMARY

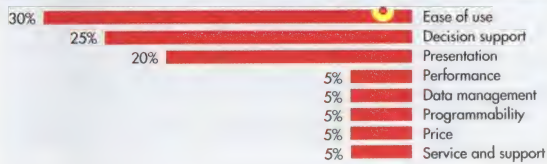
Excel 3.0: The Best There Is

Excel delivers spreadsheet muscle in a remarkably easy-to-use interface.



Excel 3.0 wins a Best Buy thanks to a gracious interface matched with dynamite features. Its auto-consolidation and outliner represent significant spreadsheet innovations, and it has the best presentation skills in the roundup. No Windows for you? Try **Quattro Pro** or the more advanced **1-2-3 3.1+**. The latest release of **1-2-3 2.3** adds a graphical interface to keep up-to-date, but **Quattro** is still the best of the low-end packages.

Key Buying Issues: Percentage of Importance



	Reader service no.	Ease of use	Decision support	Presentation	Performance	Data management	Programmability	Price	Service and support	Overall value
Excel 3.0	679	★★★★	★★★★	★★★★	★★½	★★★★	★★★★	★★★★	★★★★	★★★★
1-2-3 release 3.1+	678	☆☆	☆☆☆☆	☆☆	☆☆☆☆½	☆☆☆☆	☆☆☆☆½	☆☆	☆☆½	★★★★
Quattro Pro 3.0	680	☆☆☆	☆☆½	☆☆☆☆½	☆☆☆☆	☆☆	☆☆☆☆½	☆☆☆☆	☆☆☆	★★★★
1-2-3 release 2.3	677	☆☆½	☆☆	☆☆	☆☆½	½	☆☆☆☆½	☆☆☆☆	☆☆½	★★½
Wingz 1.1A	682	☆☆	☆☆½	☆☆☆☆½	☆☆☆☆	½	☆☆☆☆½	☆☆☆☆	☆☆☆☆½	★★½
SuperCalc5.0c	681	☆☆½	☆☆	☆☆	½	½	☆☆☆☆½	☆☆☆☆	☆☆	★★

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

1-2-3 release 2.3

Lotus Development Corp.
55 Cambridge Pkwy.
Cambridge, MA 02142
617/577-8500
LIST PRICE: \$495
Reader service no. 677

1-2-3 release 3.1+

LIST PRICE: \$595
Reader service no. 678

Excel 3.0
Microsoft Corp.
One Microsoft Way
Redmond, WA 98052
800/426-9400,
206/883-8101 (fax)
LIST PRICE: \$495
Reader service no. 679

Quattro Pro 3.0

Borland Int'l
1800 Green Hills Rd.
P.O. Box 660001
Scotts Valley, CA 95067-0001
800/331-0877,
408/438-8400
LIST PRICE: \$495
Reader service no. 680

SuperCalc5.0c

Computer Associates Int'l Inc.
1240 McKay Dr.
San Jose, CA 95131
800/531-5236
LIST PRICE: \$149
Reader service no. 681

Wingz 1.1A

Informix Software, Inc.
16011 College Blvd.
Lenexa, KS 66219
800/331-1763
LIST PRICE: \$499
Reader service no. 682

THE EUROPEAN IT EVENT OF THE YEAR

HOTEL EXCELSIOR

VENICE

25th-27th SEPTEMBER 1991

Europe is now the world's largest IT market. The IDC Annual Forum provides senior decision makers with a unique environment in which to evaluate the strategic opportunities that developing IT trends will present.

THE SPEAKERS

Speakers taking part include:

Michel Carpentier

Directeur Général, Commission
of the European Community

Vittorio Cassoni

Managing Director, Olivetti Group

Michel Jalabert

Vice President, Cap Gemini Sogeti

Pat McGovern

Chairman & CEO,
International Data Group

Jochen Tschunke

Chairman, Computer 2000

Peter Bonfield

Chairman & CEO, ICL plc

Georges Cassir

Director of Channels, Digital Europe

Pierre Hessler

Director General, Marketing & Operations,
IBM Europe

Francis Lorentz

Chairman & CEO, Groupe Bull

Ian Stewart

Director Europe,
BT Business Communications

Hans-Dieter Wiedig

Chairman & CEO, Siemens Nixdorf
Informationssysteme AG

REGISTER TODAY!

Return the form below to provisionally book your place and obtain full details of this major event. The cost for the three day conference is just £750. Demand for places is already high so please post your booking form or fax it to the number below today.



WHO SHOULD ATTEND?

CEOs, IT/MIS Directors
and Managers from
major organisations
using IT, Hardware,
Software and Services
Vendors, VARs, Distri-
butors, Component
Vendors, Consultants
and Analysts.

YES, I would like to register for the European IT Forum, please send me a booking form and full details of the conference.

Name _____ Position _____

Company _____

Address _____

_____ Post Code _____ Tel _____



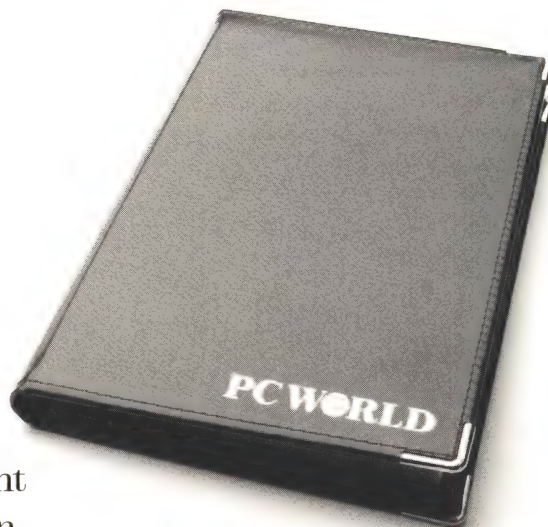
Return this form to:

Lyn Cooke, IDC, 2 Bath Road, London W4. Tel (44) 81 995 7606/7372 Fax: (44) 81 995 7224

NOW AVAILABLE . . .

THE PC WORLD INSTANT REFERENCE CARD PORTFOLIO

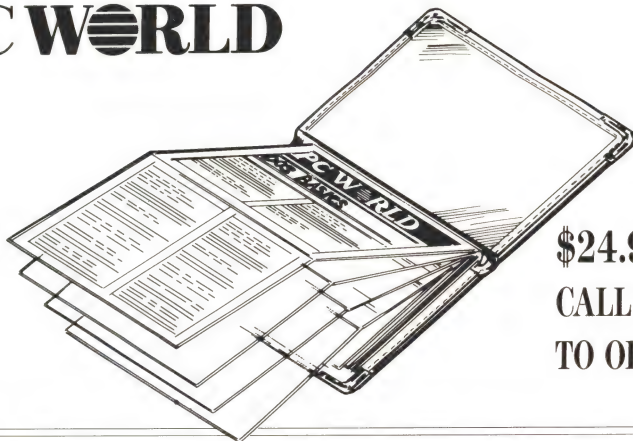
.....



Surprise! Did you know that right now you get a free information-packed reference card in every issue of *PC World*? Tear out and save the guide for quick answers to common questions about DOS, 1-2-3, WordPerfect, dBase III Plus, Windows 3.0, and all the other applications you use daily. As the months go by, you'll be building a reference library that could save you precious minutes when you're under fire.

But information is only useful if you can get your hands on it when you need it, right? Custom-designed to keep your cards clean, neatly organized, and accessible, *PC World's* Instant Reference Portfolio holds a year's worth of cards in individual clear-plastic sleeves. Each card and sleeve folds in half, keeping the portfolio a trim, easy-to-carry 10" x 6" size. The portfolio comes with a scratchpad so there's plenty of space for your own notes and reminders. This could become the most valuable item on your desktop—after your PC, of course.

PC WORLD



\$24.95 SHIPPING INCLUDED.
CALL 1-800-395-5763
TO ORDER TODAY!

Built-In 8 Bit Video
RAM - 256 Colors!

Built-In SCSI HD Port
(attach up to 6 HD
w/out more controllers)

Built-In 1.44
3-1/2" Sony Drive

Built-In Serial Port
for Printing

Built-In Modem Port

Built-In Networking
(AppleTalk standard,
Ethernet optional)

Built-In Stereo Sound
Chip & Microphone
(attach voice messages
to your documents!)

Includes DOS Mounter
(auto mounts and
reads & writes
3-1/2" DOS disks)

MAC LCX



Macintosh LC

- LCX Includes**
- **120MB** Hard Drive
 - **4MB** 80 ns RAM
 - **68882** Motorola mac co-processor
 - 14" color monitor with swivel tilt and 2 yr. warranty
 - Genuine Apple kbd & mouse
 - HyperCard graphic and sound database
 - Basic word processor
 - Apple File Exchange for translating DOS files

MacFriends is Simply the Best!

Knowledgeable MacFanatics
1000's of Products in Stock
Systems Pre-Configured & Tested
Unbeatable Support & Service

Accept
no imitations.
Those in the know
don't do windows!

\$2988
Lease for just \$96/mo.

MacFriends
is the complete
source for all
your Macintosh
needs!

SIMPLY BETTER

Life can get pretty complicated, but most of the time it doesn't have to. Take, for instance, your computer needs. For a top-line business machine that will meet all of your needs you could buy a Dell system 333D. This is a 386 system with 100MB HD, 4MB RAM, VGA, all for the extraordinary price of \$4199. (As published in the June 1991 issue of PC WORLD.)

OR... you could buy a Macintosh LCX from MacFriends. Recent studies show that the LC outperforms 386sx machines from IBM and Compaq by 47% to 63%*... an important difference when it comes to your productivity. And it runs thousands of programs that all work in the same simple intuitive way.

Apple made computers faster and easier to use so you can be more productive. Now MacFriends brings all of this to you for less!

When you think about it, the choice is simple.

Mac Friends

800 338-9942

Call Toll Free Today!

24 HOUR QUICKFAX (503)255-0067 COMPUSERVE "GO MF"

Call
today for a
simple solution
to all of your
computing
needs.



Ask about SPECIAL SOFTWARE OFFER!!

* An Ingram Laboratories study, published February 1991. Ask for details when you call.
Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. Compaq is a registered trademark of Compaq Computer Corp.
IBM is a registered trademark of International Business Machines Corp. Dell is a registered trademark of Dell Computer Corp. 386 is a trademark of Intel Corp.

Getting the E-Mail Message

Still not using E-mail? Find out which of the E-mail leaders make sending and managing messages a snap.

Robert Lauriston



GORDON STUDER

If you're not using electronic mail, you're not using your local area network to full advantage. In fact, if you don't have a LAN, E-mail is probably reason enough to install one.

E-mail combines the precision of a typed letter with the immediacy of a phone call. Consider how you normally distribute information in your company. You type a memo in your word processor; print it out, distribute copies among the recipients' in-boxes, and store copies in the filing cabinet. With E-mail, once you've typed your message, you're practically done—all that's left is to select the addressees and save a copy to an electronic "folder."

Best of all, E-mail means fewer meetings. You can broadcast information to coworkers and reach group decisions by exchanging messages. For meetings you can't avoid, many E-mail packages provide group scheduling utilities, which help you find a convenient time and place to meet and keep track of things like conference rooms.

E-mail doesn't stop at the office door; either. The top packages allow you to keep in touch with people on LANs in your company's other offices, telecommuters working at home, and laptop-toting employees in the field. You can hook into mail systems running on other platforms, from the minicomputer in the accounting department to the Macintoshes over in marketing. You'll be able to send and receive faxes from your workstation or tap into on-line services like CompuServe and MCI Mail. And with Novell's Message Handling Service (MHS), you may even be able to exchange mail between different office E-mail systems (see the sidebar "MHS: Mix-and-Match E-Mail").

The E-Mail Mystique

We took a look at seven of the top-selling office E-mail programs. All of them work on Novell NetWare and other common network operating systems, and most offer all the benefits outlined above. Three of the programs come in

both DOS and *Windows* versions, which you can install and run on the same LAN.

Best Buy *cc:Mail* is the postal service of choice. It does the best job of linking E-mail to the world, and its scheduler option handles group scheduling tasks with aplomb. Close contender *Da Vinci eMail* is the easiest program to use, but it doesn't give you folders—the essential tool for organizing your messages. *Microsoft Mail for PC Networks* matches *cc:Mail* for message handling but lacks the connectivity options many users will need.

E-mail is rapidly changing the way we work. And with group scheduling now an expected part of a well-rounded package, E-mail is becoming the primary shared application for busy offices. Once you begin to use E-mail, you may begin to wonder how you ever got along without it.

Robert Lauriston is a contributing editor for PC World.

cc:Mail

PROS: Broad connectivity, built-in fax viewer, archive utility

CONS: Can't sort folders, scheduler not integrated with mail, limited *Windows* version



WINDOWS Lotus's *cc:Mail for DOS 3.2* and its *Windows* version 1.0 offer everything you need in messaging, mail management, and connectivity. Intelligent menu organization makes both DOS and *Windows* versions a breeze to learn and use. It's clearly a Best Buy.

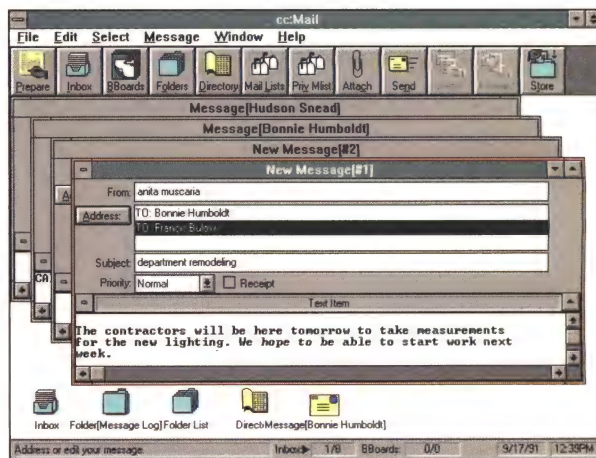
Sending a *cc:Mail* message is easier than addressing an envelope and licking a stamp. A memory-resident version lets you send and receive mail from any DOS app, though you can't access messages in folders.

The DOS version's message management skills are tops. You can file messages in folders and retrieve them by a

wide variety of search criteria, narrowing your selection in successive passes. And *cc:Mail* lets you archive selected messages to disk while preserving all attachments and addresses.

cc:Mail for Windows 1.0 adds the ability to replace the built-in editor with a word processor and to easily view attached files. But a sometimes confusing mix of icons and pulldown menus makes the *Windows* version harder to use, and you can't search across folders or view a list of messages that match your criteria.

You can't beat *cc:Mail* for connectivity, and its optional group scheduler (a version of Powercore's *Network*



cc:Mail for Windows lets you read or compose as many messages as you like, each in its own window.

Scheduler II) is well designed. However, it's not integrated directly with E-mail, so you must switch to the scheduler to reply to a message proposing a meeting.

cc:Mail for DOS is the most comprehensive E-mail package you can get. Its *Windows* counterpart, though slightly flawed, is also the best in its class.

Buying Smart: Making the E-Mail Connection

An E-mail system is effective only if everyone uses it—that's why ease of use is your primary consideration. Next in importance are tools for composing and addressing mail and managing your burgeoning in-box.



EASE OF USE

Using E-mail should be easier than sending a traditional interoffice memo. Look for a program that lets you read and send messages without having to exit your main application, either via a pop-up memory-resident option or a context switcher that lets you jump between programs.



MESSAGING

As with paper mail, your E-mail package should provide a complete range of addressing options: copies, blind copies, return receipts, and priority mail to identify and speed delivery of urgent messages. You should be able to easily reply to a message or forward it to the proper recipient. And you'll want to be able to set up both private and shared mailing lists.

All the programs come with passable text editors, but you'll probably want to compose long messages in a word processor, then import the text files. If you use the editor, you'll want to be able to save drafts and view the original message while replying. E-mail is also an easy way to swap files; look for the ability to attach at least a dozen items to a message.



MESSAGE MANAGEMENT

E-mail messages can pile up fast. The crucial feature for managing mail is folders, which let you sort mail into logical categories.

Look for global message processing, so you can select several messages and move them to a folder en masse.

Storing messages is only half the battle—you also need to be able to find a message quickly. Look for a program that searches by a variety of criteria—such as name, date, subject, and keywords—and lists the relevant messages by title or subject. The top programs can search across all folders and search message text. Another handy feature is message threading, which puts E-mail into context by displaying the preceding messages.



CONNECTIVITY

E-mail can link your employees whether they're across the hall or across the country. But connectivity options usually cost extra and require a dedicated PC.

If you exchange mail with outside offices, you want LAN-to-LAN links via modem, plus a directory exchange utility to keep the E-mail address lists on all the LANs in sync. Remote access programs are essential for accessing mail from home or on the road. Offices that use a variety of hardware platforms will need links to Macs, minis, and mainframes. For connecting your E-mail system to the rest of the world, look for fax gateways that let you send and receive faxes from your PC, and links to commercial E-mail services such as MCI Mail. And to gain access to the widest range of third-party gateways or other office E-mail systems, MHS support is a must.



ADMINISTRATION

For NetWare administrators, the key feature is the ability to share the LAN's user

data base. Otherwise, every change (such as adding or deleting a user) will have to be duplicated manually. Look for programs that don't require a lot of drive mappings or changes to CONFIG.SYS.



GROUP SCHEDULING

Try to arrange a meeting time with a dozen people via E-mail, and you may get back a dozen different suggestions. A good group scheduler helps you quickly sort out who's available and when. The top packages let you select participants, view a bar chart of each person's busy and free times, and suggest a meeting time which all participants can either accept or decline. Ideally, a scheduler will be well integrated with E-mail so you won't have to exit the scheduling module to reply to messages.



SERVICE AND SUPPORT

When you get stuck, there's no substitute for help at the end of a phone line. We called each vendor's tech support lines three times, noting the promptness, accuracy, and completeness of the responses. We also factored in policies such as hours, toll-free lines, and BBS and fax support.



PRICE

Our price ratings are based on average per-user cost for one 10-user, two 25-user, and one 50-user system, the last on two LANs linked by modem. Where available, we factored in the cost of dial-in software for 5 remote users. But your final cost may vary: be sure to consider added changes for any gateways, remote-access programs, or other options.

FEATURES EVALUATION

When You Absolutely, Positively Need E-Mail

Programs such as Best Buy cc:Mail make overnight mail services look like the Pony Express. You can send and receive messages across the office or across the country from the comfort of your keyboard.

- Yes
 ○ No
 ◐ Deficient
 ▼ Limited only by available disk space

	cc:Mail for MS-DOS 3.2 cc:Mail for Windows 1.0	The Coordinator II 2.10 Da Vinci eMail for Windows 1.8	Da Vinci eMail for DOS 1.7	Higgins 2.4	InBox Plus for DOS 3.0	Microsoft Mail for PC Networks 2.1	Wordperfect Office 3.0
Standard features							
Average price per user ¹	\$55	\$111 ²	\$48	\$97	\$45 ²	\$102	\$90
RAM required	350K ³ /640K ⁴	640K	256K	512K	384K	384K ³ /640K ⁴	640K
Context-sensitive help	◐ ³	●	◐ ³	●	●	●	●
Recognizes NetWare password	●	◐ ⁵	◐ ⁵	◐ ⁵	○	○	●
Access E-mail without exiting application	◐ ⁶	○	●	●	○	◐ ⁶	●
Messaging							
Copies	●	●	●	●	●	●	●
Blind copies	●	○	●	○	●	○	●
Return receipt	●	○	●	●	●	●	●
Forward message	●	●	●	●	●	●	●
Reply to message	●	●	◐ ⁷	◐ ⁷	●	●	●
See message while replying	◐ ⁴	●	●	○	●	◐ ⁴	●
Public and private mailing lists	●	●	●	●	●	●	●
Import/export ASCII	●	●	●	●	●	●	●
Save drafts	◐ ⁴	○	◐ ³	●	●	○	○
Multiple windows	◐ ⁴	○	○	○	●	○	○
Screen capture utility	●	○	○	○	○	●	●
Maximum file attachments	20	1	▼	26	▼	200	100
Priority classifications	3	0	4	2	2	5	3
Message management							
Store mail in folders	●	◐ ⁸	○	●	●	●	○
Store folders on local drive	●	○	○	○	●	●	○
Shared folders (bulletin boards)	●	○	○	○	○	◐ ⁹	○
Archive selected messages	●	○	○	○	○	◐ ³	○
Save copies of all mail sent	●	●	●	○	●	●	●
Global processing of mail	●	●	●	○	●	●	●
List messages by:							
sender	◐ ³	◐	◐ ¹⁰	●	◐ ¹⁰	○	○
subject	◐ ³	○	●	●	●	○	○
date range	◐ ³	◐ ¹¹	●	●	○	○	○
keyword	●	●	○	●	○	○	○
Search across all folders	◐ ³	○	○	◐ ¹²	○	◐ ³	○
Full-text search	●	○	○	○	○	●	○
Message threading	●	●	◐ ¹³	●	○	○	○
Sort in-box/folders	◐ ¹⁴	◐ ¹⁵	○	○	●	●	○

BEST
BUY

	cc-Mail for MS-DOS 3.2 cc-Mail for Windows 1.0 ^W	The Coordinator II 2.10	Da Vinci eMail for DOS 1.7 Da Vinci eMail for Windows 1.8 ^W	Higgins 2.4	InBox Plus for DOS 3.0	Microsoft Mail for PC Networks 2.1 ^W	Wordperfect Office 3.0
Remote PC access	● ¹⁶	● ¹⁶	●	● ¹⁶	○	○ ¹⁷	○
LAN to LAN	● ¹⁶	●	● ¹⁶	● ¹⁶	○	●	● ¹⁶
Directory exchange	● ¹⁶	○	● ¹⁶	●	○	○	○
MHS	● ¹⁶	●	●	● ¹⁶	○	○ ¹⁷	● ¹⁶
Fax (send and receive)	● ¹⁶	○	● ¹⁶	● ¹⁶	○	○ ¹⁷	○
Macintosh workstations	● ¹⁶	○	○	○	●	○ ¹⁷	○
Links to commercial E-mail	● ¹⁶	○	○	○	○	○	● ¹⁶

Administration

Share NetWare user and group IDs	●	○	● ⁵	○	● ¹⁸	○	●
Drive mappings required	0	3	0	0	0	1	1
Requires changes to CONFIG.SYS	●	●	○	○	○	○	○

Group scheduling

Group scheduler	● ¹⁶	● ¹⁹	● ¹⁶	●	○	○	●
Suggests conflict-free meeting time	●	○	○	●	○	○	●
Time-conflict bar graph	●	●	●	●	○	○	●
Personal calendars	●	●	○	●	○	○	●

Service and support

Toll-free number	●	○	●	●	○	○	●
Daily support (weekday hours)	10	9	12	11	10	9	10
BBS	●	●	●	○	●	○	●
Fax	●	●	○	○	○	○	○
Additional extra-cost services	●	●	●	●	●	○	●

BEST
BUY

^W Indicates Windows product.

¹ Average of one 10-user, two 25-user, and one 50-user installation, the last on two LANs linked by modem.

² No LAN-to-LAN links available.

³ DOS version only.

⁴ Windows version only.

⁵ Truncates log-in to 8 characters.

⁶ Memory-resident DOS version extremely limited.

⁷ Replies to sender only.

⁸ Keywords provide folderlike capabilities.

⁹ Windows version can't address messages directly to shared folders.

¹⁰ Doesn't provide list.

¹¹ By date thread started, not date of individual message.

¹² By date range and/or assigned keyword only.

¹³ Displays list of messages but can't follow thread.

¹⁴ In-box only, by date only.

¹⁵ By date only.

¹⁶ Extra-cost option.

¹⁷ Unavailable at press time.

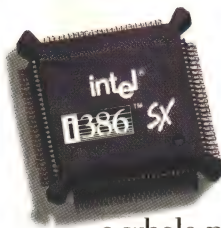
¹⁸ Imports user IDs but not groups.

¹⁹ When participant declines to attend meeting, organizer is not notified.

A true of power, and

*Current DOS users can purchase a 5.0 upgrade package. To order your version of DOS 5.0, see your IBM Authorized Remarketer, or call 1 800 IBM-7699 to order a single copy. IBM, Personal System/2 and PS/2 are registered trademarks and Micro Channel is a trademark of International Business Machines Corporation. 386 is a trademark of Intel Corp. ©1991 IBM Corp.

story fame SX.



Right from the start, the IBM PS/2[®] Model 55 SX hit the bestseller list, making it the leading i386[™] SX machine. And now IBM is opening a whole new chapter with 386 SX 20 MHz models designed to meet your needs.

The Personal System/2[®] Model 57 SX brings new levels of value to a Micro Channel[™] PS/2, providing data integrity and increased performance for multitasking and networking. Standard 4MB RAM is upgradable to 16MB, 80 or 160MB hardfiles are available, and five expansion slots/four DASD bays offer true flexibility and expandability. Our two newest AT-bus PS/2s deliver powerful performance at practical prices. Models 40 SX and 35 SX have 2MB RAM upgradable to 16MB and fast 40 or 80MB hardfiles. The 40 SX has five slots/four bays, while the 35 SX packs its power into a smaller footprint.

IBM also has new ways to improve PS/2 performance, like a new, faster, more user-friendly DOS 5.0 that requires less memory, yet offers more advanced functions.* The new PS/2 3.5" Rewritable Optical Drive utilizes the latest magneto-optical technology, and the new Model 8504 12" monochrome display lets you view it all with amazing clarity.

To get the full story, including our "PC Trade-In Offer," contact your IBM Authorized Remarketer or IBM marketing representative. For a remarketer near you, call 1 800 272-3438, ext. 386.



How're you
going to do it?
PS/2 it!



The Coordinator II 2.10

PROS: Displays message histories, integrated scheduler

CONS: Only one attachment per message, difficult interface, expensive, no TSR

The Coordinator is designed not just to deliver E-mail but to streamline office

communications using a system of standard message types. However, its thorny interface and rigid message system may well have the opposite effect.

The Coordinator takes an unusual approach to messaging: You select from a series of message types like Inform and What If. If you choose 'OK, except' when replying to a 'Request', *The Coordinator* inserts 'OK,

if we agree to some changes' into the subject heading of your response. This device is clever but it still doesn't really make messaging easier or make up for the lack of such basic tools as return receipts and multiple file attachments.

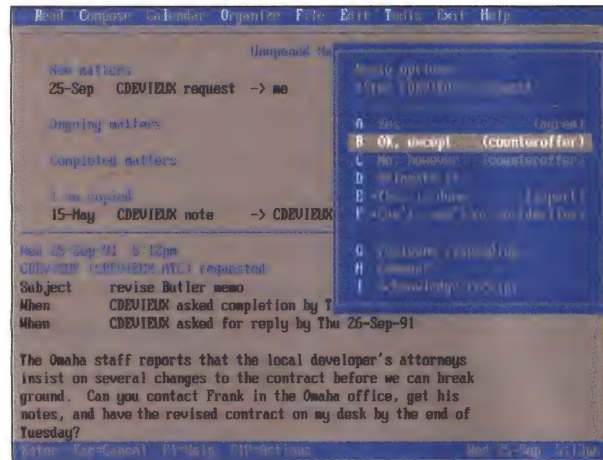
The Coordinator's strength is its *message threading*, which lets you view

a history of preceding messages as you compose your reply. You can even search for unfinished threads, such as unanswered Question messages. There are no folders, but you can at least search messages by one or more keywords of up to 9 characters each.

The program comes with a rudimentary personal calendar and integrates a version of *Network Scheduler*. However, when someone declines to attend a meeting, that person's name is removed from the attendee list with no notice to the organizer—bad news if you regularly plan meetings with more than a handful of participants.

The Coordinator is no joy to set up and administer. It had trouble with Quarterdeck's *QEMM386* memory manager, and the company couldn't provide a work-around. The technical support staff, although well informed, usually took several hours to get back to us.

Viewing message threads is nice, but when it comes to basic E-mail, *The Coordinator* is a little uncoordinated.



Short on time? *The Coordinator's* series of built-in message types lets you respond quickly.

Da Vinci eMail

PROS: Easy to use, customizable, inexpensive

CONS: No folders, limited reply feature

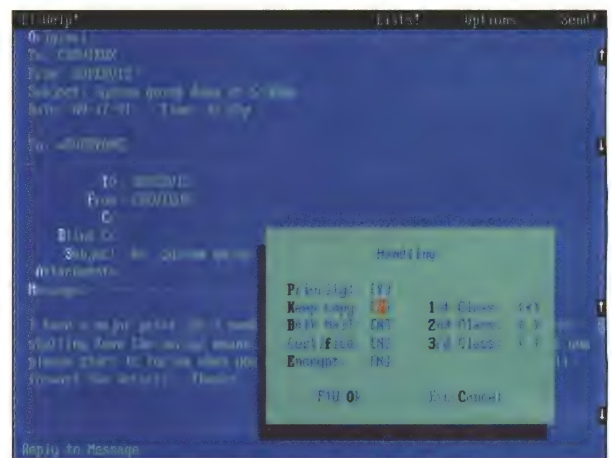
WINDOWS Judged solely on the amiable interfaces, both *Da Vinci eMail* for DOS 1.7 and its *Windows* version would take top honors. You also get excellent messaging and group scheduling features for a low price. But *Da Vinci's* lack of folders for storing and organizing messages keeps it from besting *cc:Mail*.

Mouse support, pulldown menus, and plenty of hot-key shortcuts make *Da Vinci* the easiest E-mail for DOS users. The *Windows* version (1.8) is nearly identical, except it won't let you save a draft once you've addressed it. Macros let you send E-mail directly from major *Windows* applications like *Word for Windows*. However, in both versions the Reply command is limited; you can reply only to the sender and must add

other addressees or copies manually, which makes it harder to conduct group discussions.

Da Vinci uses *Network Scheduler* to help you plan meetings, and its connectivity options are impressive. *Da Vinci* augments its LAN-to-LAN links with an automatic directory exchange utility, so your mailing list stays up to date. At \$150 per user, remote access is far cheaper than other programs', and it's the only one to offer a *Windows*-based remote package. You can also buy gateways for fax and SNMP (to communicate with UNIX LANs).

But the day you come back from vacation and find 300 messages in your in-



Typical of *Da Vinci's* elegant design is the way it lets you check off all its message handling options in a single dialog box.

box, you'll wish you had folders. Your only option is to save messages to text files, stripping them of attachments and losing the ability to forward or reply.

If *Da Vinci* had folders, it would be a great program. But if you expect message traffic to be heavy—and it probably will—try *cc:Mail* instead.

MHS: Mix-and-Match E-Mail

Eric Brown

You've just completed a memo in your word processor, and you're ready to pop it in the mail. You open the Mail menu, select an addressee from a list of co-workers, and send it off. Down the hall, your associate receives the message in *cc:Mail*, skims it, attaches a spreadsheet file, then forwards it to her boss, who picks it up in his groupware package. He pops up a scheduler to check a date, adds a note to the message, and sends it to the marketing department where another executive reads it in *Da Vinci eMail* and sends it off via a third-party fax gateway.

This mix-and-match E-mail scenario can happen today if you're on a NetWare LAN that's equipped with Novell's MHS (Message Handling Service)—an increasingly common message format that links different mail systems and MHS-compatible software.

MHS is essentially an E-mail engine that includes a set of messaging features but no user interface. Not only can two departments using different E-mail packages be linked with MHS, but when MHS is installed on a gateway PC, it serves as a LAN-to-LAN gateway to other MHS LANs. A wide variety of MHS add-ons are currently available, including fax servers and mini/mainframe connections.

Mail-Enabled Applications

Most of the full-strength E-mail packages reviewed in this article offer their own proprietary gateways and inter-LAN links, and most also provide MHS support or offer it as an

extra-cost option. In addition, the majority of RAM-resident pop-up E-mail utilities and groupware scheduling programs also support the MHS standard, depending entirely on MHS to handle connectivity. That means you don't have to purchase the same E-mail solution for everyone in the office. Individuals or work groups within the larger network can move up to scheduling, forms, project management, and other mail-enabled add-ons when they're ready—and they'll still be in touch with the group at large.

The latest twist: MHS-based workflow managers such as Beyond's *Beyond Mail* and Reach Software's *MailMan*. These programmable E-mail managers gather your E-mail from MHS, filter it according to a set of rules you dictate, and route mail automatically if certain fields embedded in the messages meet the defined criteria.

But most of the new mail-enabled applications you'll encounter will be more familiar. You can now do basic MHS messaging from popular applications like *MultiMate*, *Framework*, and 1-2-3 (via Beyond's *@Mail* utility). Most of these are simple utilities, but look for more packages like Software Publishing's *Professional Write Plus for Windows*, a word processor that includes full-featured MHS E-mail.

An E-Mail Engine in Transition

Novell recently shipped MHS 1.5, which adds the ability to attach multiple files (up to 64) to a single message. The company used to bundle MHS free with any NetWare LAN,

but now it charges \$495 per server—an indication that Novell is taking MHS seriously.

But MHS still has room to grow—for example, MHS 1.5 lacks an exchange service to keep linked LANs' mail directories in sync. And at press time, Novell was still working on some incompatibilities with earlier versions of MHS.

The mix-and-match approach has its dangers, too—if you buy an MHS-based gateway from a third-party company, it may not be clear who's responsible for fixing whatever goes wrong: the E-mail company? The gateway company? Novell? To avoid a technical support maze, the accompanying reviews and feature table discuss MHS-based gateways only when they're sold and supported by the E-mail vendor.

Until MHS matures, you may want to invest in an E-mail package that offers its own proprietary connectivity options in addition to MHS—*cc:Mail*, for example. Down the road, the common E-mail lingua franca may be X.400, an internationally agreed-upon E-mail standard. But X.400 is difficult to implement, and capable directory management tools won't be ready for a few years, when X.500 is expected to ship.

In the meantime, MHS is clearly the standard. And as it proliferates, you'll see more mainstream applications offering E-mail from only a keystroke or a mouse click away.

Eric Brown is a senior editor for PC World.

Windows 3, DOS 5,

1990 World Class Award for
Best Mail-Order Company



- ☐ 3 1/2" format available from us. Specify when ordering.
☒ package includes both 5 1/4" and 3 1/2" disks.
☒ 3 1/2" format available from manufacturer by request. Call us for details.
CP—copy-protected; **NCP**—not copy-protected.

The four-digit number next to each product is the product's **ITEM NUMBER**. Please refer to this number when ordering. Thank you.

SOFTWARE

We only carry the latest versions of products. Version numbers in our ads are current at press time. Products listed here in red are Microsoft Windows Applications.

Adobe Systems ... NCP	
7547	Adobe Type Manager 1.1 for Windows \$59.
9623	Adobe TypeAlign 1.0 for Windows . . . 69.
	Adobe TypeSets for Business. . . . ea. 95.
9874	Adobe TypeAlign 1.0 w/ATM. . . . 125.
7928	Adobe Plus Pack 1.0. . . . 129.
8367	ATM & Plus Pack Bundle. . . . 189.
7392	Adobe PostScript Cartridge 299.
(Entire Adobe Type Library, from 1 to 220 is available. Call for more information.)	
Aldus ... NCP	
8000	Persuasion 2.0 for Windows 339.
1332	PageMaker 4.0. . . . 499.
Alpha Software ... NCP	
5104	Alpha Four 1.1 309.
Application Techniques ... NCP	
1214	Pizazz Plus 2.0 69.
9621	Picture Eze 1.0 for Windows 99.
Ashton-Tate ... NCP	
4450	dBASE IV 1.1. . . . 499.
Asymetrix ... NCP	
7384	Toolbook 1.5 for Windows. . . . 299.
Atech Software ... NCP	
9436	Publisher's Powerpak 1.2 for Windows. 49.
9435	Publisher's Powerpak 2.1 for WordPerfect & Microsoft Word 49.



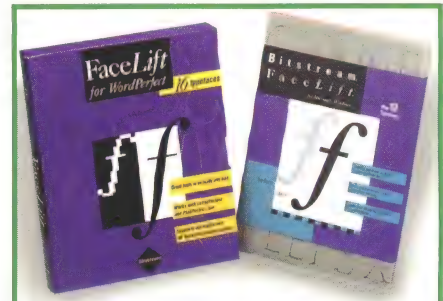
Corel Systems ... NCP
5506 ☐ **CorelDRAW! 2.0**—The PC graphics software that's fast, fun and powerful. CorelDRAW! 2.0 now comes with more drawing power, more type control, and more value...and it's still easy to use \$389.

Avery ... NCP	
6006	Label Pro 1.0 (Laser). . . . \$49.
7336	Label Pro 1.0 for Dot Matrix 49.
1601	1st Impression First Pack 57.
1600	Avery 1st Impression 229.
Berkeley Systems ... NCP	
9885	After Dark 1.0 for Windows. . . . 29.
Better Software ... NCP	
9786	Switch-It 3.23 55.
Bitstream ... NCP	
7568	FaceLift 1.2 for Windows 2.x/3.0. . . . 59.
8040	FaceLift 1.5 for WordPerfect 5.0/5.1 . . . 59.
7569	Companion Value Pack 1.0. . . . 125.
8883	Type City Cartridge with Deli. . . . 259.
	Typeface Packages. . . . each 89.
Borland International ... NCP	
6242	Quattro Pro 3.0 339.
9695	Borland's C++ 2.0. . . . 339.
1514	Paradox 3.5 529.
7356	Pascal Pro (2nd Edition) 209.
9635	Object Vision 1.0 call
Broderbund ... NCP	
1416	New Print Shop Companion 33.
1434	New Print Shop. . . . 39.
ButtonWare ... NCP	
6419	PC-File 6.0 89.
Caere ... NCP	
6004	OmniPage 386 3.0 469.
8933	OmniPage Professional 1.0 669.



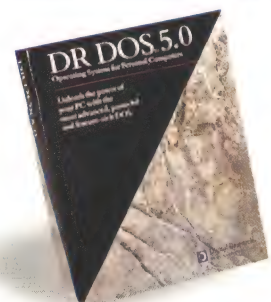
Adobe Systems
☒ **Adobe TypeSets for Business**—4 new special typeface collections for your business needs. Each package includes ATM: 2355 Letters, Memos & Faxes; 2350 Slides & Overheads; 2351 Invitations & Awards; & 2353 Spreadsheets & Graphs. ea. \$95.

Central Point ... NCP	
5039	PC Tools 7.0 115.
8114	Backup 7.0 (DOS and Windows) 84.
9751	AntiVirus 1.0. . . . 84.
Checkfree Corporation ... NCP	
6360	Checkfree 3.0 19.
Chronologic Corporation ... NCP	
8849	Instant Recall 1.2 64.
CompuServe	
7546	DOS Membership Kit 1.3 23.
Concentric Data Systems ... NCP	
6575	R & R Relational Report Writer 4.0. . . 159.
Contact Software ... NCP	
1625	ACT! 2.0 229.
Corel Systems ... NCP	
5506	CorelDRAW! 2.0 389.
Data Storm ... NCP	
4798	PROCOMM PLUS 2.0 69.
Delrina Technology ... NCP	
4325	PerFORM 2.1 95.
7351	PerFORMPRO 1.0 . . . (limited time) 159.
Digital Research ... NCP	
8288	DR DOS 5.0 145.
9694	DR DOS Upgrade to 5.0 (from any DOS version) 39.
DMA ... NCP	
8378	PC Anywhere IV 4.03 105.



Bitstream ... NCP
 Fast and easy to use, FaceLift scales printer fonts to any size. FaceLift for WordPerfect 1.5 now includes 16 typefaces and provides dot matrix support.
 8040 ☒ **FaceLift for WordPerfect 5.0/5.1** . . . \$59.
 7568 ☒ **FaceLift for Windows 2.x/3.0** . . . 59.

Fifth Generation Systems ... NCP	
7725	Direct Access 5.1 65.
3950	Fastback Plus 3.0 119.
FormWorx ... NCP	
9332	Form Publisher for Windows w/Fill & File 109.
Fox Software ... NCP	
6188	FoxPro 2.0 (exp. release 7/31/91) . . . 459.
Funk Software ... NCP	
7380	P.D. Queue 1.0 (print spooler) 59.
2228	Sideways 3.3 59.
Geoworks ... NCP	
8789	Ensemble 1.0 129.
Gibson Research ... NCP	
9832	SpinRite II 2.0 64.
Great American Software ... NCP	
9827	Business Value Pack. . . . 99.
4880	One Write Plus Acct. Sys. 2.06 . . . 189.
Hayes ... NCP	
7983	Smartcom Exec 2.0 79.
9639	LANstep 1.0 349.
hDC Computer Corporation ... NCP	
7383	First Apps 1.0 52.
Helix Software ... NCP	
9627	Netroom 2.0 (single user) 52.
9628	Headroom 2.0 65.
Hilgraeve ... NCP	
8204	HyperACCESS/5 2.0 (DOS) 65.
Individual Software ... NCP	
1328	Professional Windows 1.0 (Windows 3.0) 27.
6222	Resume Maker 1.3 29.



Digital Research ... NCP
 9694 ☐ **DR DOS Upgrade to 5.0**—For any version of any DOS. Easily installs, works with all software and files. Increases 286/386 RAM availability to over 620K. . . . \$39.



PC Commitment.

**Don't stand on ceremony.
(Or, why you should give us a ring.)**

Here in the conjugal kingdom of Marlow, NH (pop. 566) we take our vows pretty seriously. In fact, this summer alone, a lucky 7 of our employees are getting hitched. Sure, we know some people think of country weddings as last-minute affairs that only take place thanks to the persuasive power of the proverbial shotgun. But actually, we believe in taking it slow and doing things right the first time. Whether it's baiting the hook or tying the knot.

And regardless of the local mating habits, rest assured that when you buy from us, we'll still love you tomorrow (by which time there's a

good chance your order will have arrived). Because when you're a PC Connection customer the honeymoon never ends, the bloom is never off the rose, and, most important of all, the tech support is always free. You'd be hard pressed to find a more perfect union.

Marriage is for the birds. (And bees.)

Know what happens to the rice that's thrown after a wedding? Little birdies often eat it and their tiny tummies start to ache. And that's no tweet. To remedy this fowl situation we're sending a wedding-season's supply of premium PC Connection birdseed (with a convenient reusable carrying pouch) to everyone who places an order of \$500 or more between now and September 30.



Don't get left at the altar without a supply of PC Connection birdseed. One per customer. Not available outside continental U.S.

PC CONNECTION®

©COPYRIGHT PC CONNECTION, INC., 1991. PC CONNECTION AND THE RACCOON CHARACTER(S) ARE REGISTERED TRADEMARKS OF PC CONNECTION, INC., MARLOW, NH.

We have your number.

Practical Peripherals ... 5 years

3103	2400 Baud Internal Modem	\$129.
3102	2400 Baud External Modem	179.
8993	2400 Baud Internal Modem (V.42 bis)	169.
8994	2400 Baud External Modem (V.42 bis)	209.
4542	2400 Baud Internal Modem for PS/2	229.
8132	PM2400 Pocket Modem	109.
7934	PM9600SA Modem	469.

Targus ... lifetime

1305	Universal Notebook (for ntbk. computers)	69.
6037	Premier Leather Carrying Case	179.

TheComplete PC ... 2 years

8082	TheComplete Half Page Scanner/400	289.
5828	TheComplete Communicator	449.

Toshiba ... 1 year

9893	T2000SX Notebook (40 Meg)	2999.
9894	T1200XE Laptop (40 Meg)	2099.
1773	T3200SX Laptop (120 Meg)	3499.

Tripp Lite ... 2 years

6199	Isobar 4-6 (4 outlets, 6 ft. cord)	49.
6200	Isobar 6-6 (6 outlets, 6 ft. cord)	59.
6201	Isobar 8-12 (8 outlets, 12 ft. cord)	69.
6018	LC1200 (1200W line conditioner)	159.
1528	PS6.0 (600VA on-line UPS)	559.

Video 7 ... 7 years

4931	VRAM II VGA 512k	259.
------	------------------	------

Zoom Telephonics ... 7 years

1307	2400 Baud w/9600 Baud Fax Modem	129.
1181	2400 Baud V.42bis Modem	159.

Seagate ... 1 year

4554	40 Meg Internal HD ST251-1 (28 ms)	\$249.
1321	ST157A 40 Mb IDE Hard Drive	229.
1320	ST1144A 130 Mb IDE Hard Drive	475.

TEAC ... 1 year

4670	1.44 Meg Drive for PC/XT (3 1/2")	69.
4326	1.44 Meg Drive for AT (3 1/2")	89.
4951	720k Drive for PC/XT (3 1/2")	69.
6951	1.2 Meg Drive for AT (5 1/4")	75.

DISKS/MEDIA

Maxell ... lifetime

2789	5 1/4" MD2-D 360k Disks (Qty. 10)	10.
2790	5 1/4" MD2-D 1.2 Mb Diskettes (Qty. 10)	15.
2792	3 1/2" DS/DD 720k Diskettes (Qty. 10)	13.
2793	3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10)	21.



Iomega ... 5 years

2224 Bernoulli II Transportable 90 Meg—Rugged and built to last, this drive will absorb 1000 g's of shock and provide 90 Meg of portable storage. Awards from *Byte* and *InfoWorld*. Requires adapter card \$799.

Logitech ... limited lifetime

2343 Trackman Portable—Designed to go anywhere, this portable trackball will attach easily to a laptop or notebook computer. Adjusts for either right or left hands. Includes soft carrying case \$105.

DRIVES

CD Technology ... 1 year

8057	Porta-Drive CD-ROM	649.
8105	Installation Kit for Standard Bus	155.

Conner Peripherals ... 1 year

8875	CP3044 40 Meg IDE HD (25 ms)	299.
2339	CP30104 120 Meg IDE HD (19 ms)	489.
1337	CP3204 200 Meg IDE HD (16 ms)	899.

IOmega ... 1 year

We are an authorized Iomega Service Center.		
5116	Bernoulli II 44 Meg Internal	829.
7551	Bernoulli II Transportable 44 Meg	call
2224	Bernoulli II Transportable 90 Meg	799.
5113	44 Meg Cartridge Tripak (5 1/4")	269.
2500	PC2B Controller	209.

Mountain Computer ... 2 years

2917	40-60 Meg Internal Tape Drive	259.
5190	DC2000 Pre-formatted Cartridges	ea. 35.
6153	DC2120 Tape Cartridge (5 pack)	149.

Pacific Rim ... 1 year

1304	1.2 Meg External (for any parallel port)	265.
6602	1.44 Meg External (for PC/XT/AT)	239.

Plus Development ... 2 years

8304	Hardcard II XL 50 Meg (9 ms)	399.
8287	Hardcard II XL 105 Meg (9 ms)	599.

Sony ... lifetime

3291	5 1/4" DS/DD 360k Disks (Qty. 10)	8.
3297	3 1/2" DS/DD 720k Diskettes (Qty. 10)	11.
3298	3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10)	18.
6148	3 1/2" DS/DD (3 Pack)	29.
6375	3 1/2" DS/HD (3 Pack)	49.
8185	QD 2040 Tape Cartridge	19.
1895	QD 2120 Tape Cartridge	22.

3M ... lifetime

3943	DC 2000 Tape Cartridge	19.
6065	DC 2080 Tape Cartridge	25.
3944	DC 600 Tape Cartridge	29.
5679	DC 6150 Tape Cartridge	29.

MEMORY

6556	256k DRAM (100 ns, set of 9)	call
5510	1 Meg x 9 SIMMs (80 nanosecond)	call
5746	1 Meg Chips (80 ns, set of 9)	call
7813	256k x 4 Chips	call

OUR POLICY

- We accept VISA and MASTERCARD only.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. \$250 minimum. Manufacturer support and upgrade eligibility may be limited outside the U.S.A.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- COD max. \$1000. Cash, cashier's check, or money order.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- To order, call us Monday through Friday 8:00 a.m. to 1:00 a.m., or Saturday 9:00 a.m. to 5:30 p.m. Eastern Time. You can call our business offices at 603/446-3383 Monday through Friday 9:00 a.m. to 5:30 p.m.



Practical Peripherals ... 5 years

7934 PM9600SA Modem—Practical Peripherals does it again by making communications affordable with their newest modem featuring the data compression & error correction of 9600bps V.32 & V.42bis operation \$489.

SHIPPING

Note: Accounts on net terms pay actual shipping.

Continental US:

- For heavy hardware items such as printers, monitors, Bernoulli Boxes, etc. pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
- For all other items, add \$3 per order to cover UPS Shipping. For such items, we automatically use Airborne Express at no extra charge if you are more than 2 days from us by UPS ground.

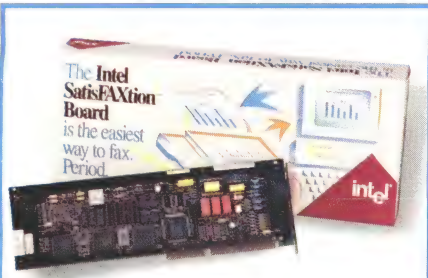
Hawaii:

- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add \$3 per order.

Alaska and outside Continental US:

- Call 603/446-7721 for information.

360, 720, 1.44 MB.



Intel ... 5 years

7782 SatisFAXtion—Send & receive faxes with the 9600 bps fax and communicate with the 2400 bps MNP modem. Fax from within most any application by way of the print command. Supports background operation & installs easily... \$399.

Datadesk ... 3 years

6901 Switchboard... 159.

Epson ... 2 years

We are an authorized Epson Service Center. New 24 pin LQ printers offer scalable fonts and enhanced paper handling.

2358 LQ-570 (80 col., 252 cps)... 289.
2361 LQ-870 (80 col., 330 cps)... 489.
2357 LQ-1170 (136 col., 330 cps)... 669.
5184 LX-810 (80 col., 180 cps, 9 pin)... 185.

Everex ... 1 year

1683 Tempo LX Notebook (5 Meg, 60 Meg HD) 3499.

Hauppauge Computer ... 1 year

9031 20 MHz 386 Motherboard for PC... 995.
9032 20 MHz 386 Motherboard for XT... 995.
9870 25 MHz 386 Motherboard for AT... 1099.
9034 33 MHz 386 Motherboard for AT... 1339.

Hayes ... 2 years

2307 Smartmodem 2400... 349.
7391 Ultra 9600 Modem... 669.
9884 Pocket Edition 2400 Plus... 129.

Hewlett-Packard ... 1 year

9993 LaserJet IIP (with toner)... 1149.

6754 LaserJet III (with toner)... 1679.

Hitachi ... 2 years

9492 CM1483M 14" SVGA Monitor (1024 x 768) 599.

Intel ... 5 years

6421 2400B MNP Internal Modem... 199.
5119 2400 Baud External Modem... 179.
6420 2400EX MNP Modem... 229.
7880 9600EX Modem... 529.
2346 Inboard 386/PC with 1 Meg... 495.
5336 Above Board Plus 8 2 Meg... 449.
5342 Above Board Plus 8 I/O 2 Meg... 479.
7782 SatisFAXtion (fax board)... 399.
8778 SatisFAXtion for Microchannel... 449.
8901 Matched Memory 2 Meg (PS/2)... 139.
8903 Matched Memory 4 Meg (PS/2)... 299.
Matched Memory (for LaserJet IIP, III, IIIP IIID)
1810 1 Meg... 99. 1787 2 Meg... 299.
1637 Snap-In 386... 389.

MATH COPROCESSORS

7385 80287XL (16 MHz 80286 CPU's)... 89.
4750 80387SX (16 MHz 80386SX CPU's)... 129.
2372 80387-20 (20 MHz 80386 CPU's)... 219.
4121 80387-25 (25 MHz 80386 CPU's)... 219.

Kensington Microware ... 1 year

2582 Master Piece Microware... 99.
7899 Expert Mouse serial... 119. 7900 bus... 129.

Key tronic ... 3 years

4518 101 Plus Keyboard... \$99.

Kraft ... 5 years

5800 3 button Thunder Joystick... 29.
7862 TopTrak (Laptop Trackball)... 55.

Logitech ... limited lifetime

6029 Trackman serial... 85. 6028 bus... 89.
2343 Trackman Portable... 105.
1484 ScanMan 32... 169.
7975 ScanMan 256... 319.
8694 MouseMan (serial) 69. 9766 (cordless) 139.

Megahertz ... 5 years

1193 T324D 2400 Modem (for Toshiba Laptops) 129.
1196 T224 2400 Modem (for Toshiba Laptops) 129.
1187 T324FM 96/24 Fax Modem (Toshiba Laptops) 299.
1199 T52CC - 2 Meg Upgrade for
Toshiba T1000 series or T2600SX... 299.

Micron Technology ... 2 years

7595 2 Meg Expansion for HP
LaserJet IIP or III... 119.
7012 Memory Upgrade PS/2 70 - 2 Meg... 139.

Microsoft ... lifetime

7597 Microsoft Mouse (bus or serial)... 89.
2897 Mouse with Paintbrush (bus or serial)... 105.
2898 Mouse with Windows 3.0 (bus or serial)... 149.
1956 Mouse with Works (bus or serial)... 155.
1896 Ballpoint Mouse (serial only)... 119.



Hayes ... 2 years

7391 Ultra 96 Modem—Get ultra high modem performance & error control without sacrificing compatibility. Supports CCITT V.32, V.42bis, Express 96, MNP Level 2-5, & standard 2400/1200/300 bps communications... \$669.

MicroSpeed ... 1 year

PC-TRAC Trackball
6007 serial... 75. 6008 bus... 89.
7271 Inport... 79. 6330 PS/2... 79.

Mouse Systems ... lifetime

5997 Trackball (1 yr. wrnty.) serial... 65. bus... 69.
7878 PC Mouse III (serial)... 89. (bus)... 95.

NEC ... 2 years

9441 CDR36 Portable CD-ROM Drive... 399.
4799 Multisync 2A (VGA Monitor)... 499.
5085 Multisync 3Ds Monitor... 689.

Orchid Technologies ... 4 years

7863 ProDesigner VGA IIS (with 1 Meg)... 289.

1-800/243-8088



PC Connection

6 Mill Street
Marlow, NH 03456

SALES 603/446-7721 FAX 603/446-7791

880W



Cyrix Corporation ... 5 years

FasMath Math Coprocessors—Outperform all others because they run Lotus 1-2-3, AutoCAD, Microsoft Windows family of products and other leading software faster by every available measure. New low prices... see line listings.

PC Power & Cooling ... 1 year

REPLACEMENT POWER SUPPLIES

3203 Turbo Cool 200... 149.
7915 Turbo Cool 300... 165.
7053 InnerSource 2210 (power backup)... 349.

Pacific Data Products ... lifetime

Font Bank Cartridges (programmable, for LJ II, IIP, III, IIIP, si)... 225.
25 Cartridges in One! (for LJ II, IIP, III)... 275.
8975 Complete Font Library (for LJIII)... 275.
Memory upgrade for LaserJet IIP/III:
7055 2 Meg... 149. 7759 4 Meg... 259.
Memory upgrade for LaserJet II/IIID:
6838 2 Meg... 249. 6836 4 Meg... 379.
Pacific si Memory:
2252 1 Meg... 99. 2253 4 Meg... 319.
7158 Pacific Page PE 4.0 (for LJ IIP/III)... 379.
6834 Pacific Page (for LJ II) w/2 Meg Mem. Brd. 379.
9833 Pacific Page XL (w/accelerator board)... 799.

Panasonic ... 2 years

1410 KXP 1123 (240 cps, 80 col.)... 249.
1419 KXP 1124i (240 cps, 80 col.)... 319.
8144 KXP 1624 (192 cps, 132 col.)... 399.



Canon ... 1 year

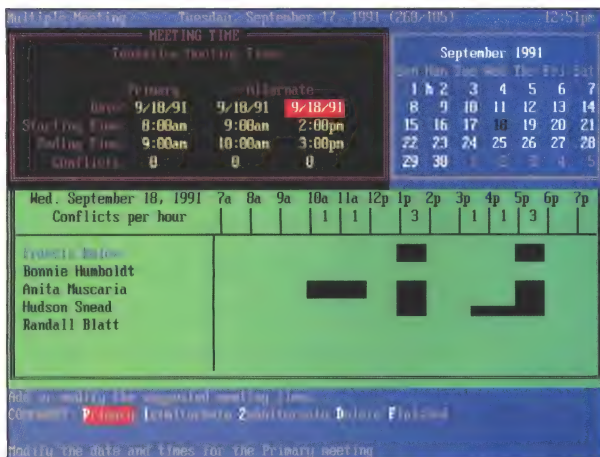
7894 BJ-10e BubbleJet Printer—Light weight, excellent print quality and a great price make this 4.6 lb. printer a winner. Choice of black or white. Includes free carrying case. Optional sheet feeder... \$329.

Higgins 2.4

PROS: Excellent scheduler, contact-management tools, displays message histories

CONS: Awkward interface, difficult to administer

In several respects, *Higgins* is the most powerful program reviewed. Its connec-



Higgins's scheduler makes finding a workable time for a meeting very easy. You can even propose three possible times in one message.

tivity options are first class, and it's the only program that tightly integrates group scheduling with full-featured E-mail. Unfortunately, an ungainly interface makes the program hard to learn and use.

Higgins combines a confusing menu structure with some annoying quirks. For example, when attaching a group of files from the same directory, you must retype the path for each one. To change the sometimes garish screen colors, you have to run a BASIC program.

On the other hand, keeping your *Higgins* mailbox in order is fairly easy. Mail folders are integrated with a personal address book that has an auto-dialer, so you can use

Higgins to store client information and have it at your fingertips when you call them. You can also trace message threads and assign keywords, but you can't tag several messages at once and move them to a folder.

Higgins's group scheduler is the best of the bunch. After consulting a time-conflict bar graph, you can propose as many as three meeting times. Prospective attendees get an E-mail message on which they check off acceptable times. When you set a time for the meeting, *Higgins* updates their personal calendars automatically.

Higgins's administrative utilities are poorly documented and absurdly hard to use. Your network administrator will end up spending a lot of time on the phone with tech support. Luckily, they're a knowledgeable bunch and seldom keep you on hold.

If you need to integrate full-power E-mail with top-quality scheduling, *Higgins* is your baby. But you'll have to put up with a cranky user interface.

InBox Plus 3.0

PROS: Easy to use, multiple windows, Mac software included

CONS: No RAM-resident mode; limited connectivity

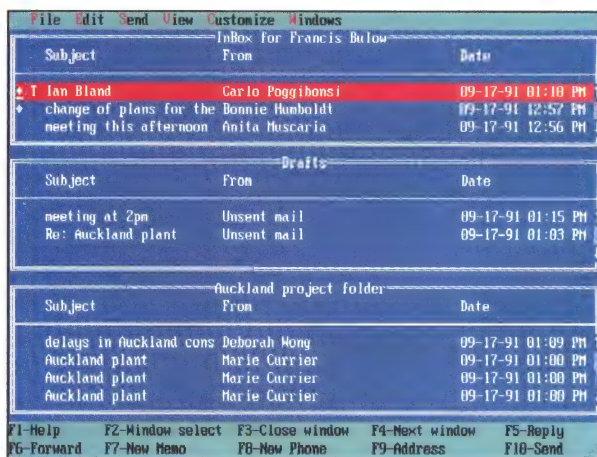
Low price, strong messaging capabilities, and an excellent interface make *In-Box Plus* a tempting buy. The program comes with Macintosh software and can link to Sun workstations, so it's an economical choice for a mixed-platform network. But you can't hook into the world beyond your LAN—bad news if you need to bring remote users or branch offices into the E-mail fold.

InBox's character-based window interface makes creating messages a snap. You can tag user or group addressees, copies, and blind copies at the same time, and likewise tag multiple file attachments. You can compose or read as many messages as you like, each in its own window. If you exit before completing a message, *In-Box* automatically

saves it to a Drafts folder. But, as with *The Coordinator*, you can't load *InBox* memory-resident, so you'll have to exit your applications to read or send mail.

With *InBox*, you can open multiple folders at once and set up folders on the server or your local hard disk. A unique undelete command lets you retrieve messages you delete accidentally. But unlike the DOS versions of *cc:Mail* and *Microsoft Mail*, *InBox* can't search more than one folder at a time.

While *InBox* is easy on LAN administrators once it's set up, getting there is a chore. You have to configure each user's account separately and alter the



With *InBox's* windowing interface, you can access drafts and frequently used folders while you're shifting through your mail.

log-in script or AUTOEXEC.BAT.

Connectivity is *InBox's* real downfall. It has no MHS option, so you can't connect to MHS-compatible mail systems. And without LAN-to-LAN links or remote-user options, it's only for companies whose communications needs don't extend beyond four walls.

1200 to 9600 bps.

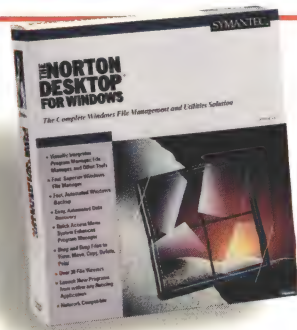


Software Publishing ... NCP

9638 ☐ Professional Write Plus 1.0 (for Windows)—Winner of PC Week's Document Processing Shootout..... \$169.
3496 ☐ Professional Write 2.2 (for DOS)—The leading managerial word processor..... 169.

Symantec ... NCP

6397 ☐ The Norton Backup 1.2 (Windows/DOS) 105.
3146 ☐ The Norton Utilities 6.0 119.
3425 ☐ Q&A 4.0 269.
7999 ☐ Norton Anti-Virus 1.0 89.
2359 ☐ The Norton Desktop for Windows 105.
Systems Compatibility ... NCP
9046 ☐ Complete Writer's Toolkit 1.1 85.
8215 ☐ Outside In 2.0 85.
6564 ☐ Software Bridge 5.0 79.
Teleware ... NCP
9847 ☐ M.Y.O.B. for Windows 139.
TIMESLIPS ... NCP
2987 ☐ Timeslips III 4.0 195.
6994 ☐ PercentEdge 1.0 69.
1270 ☐ TimeSheet Pro 2.0 145.
Timeworks ... NCP
6253 ☐ Publish-It! 2.0 139.
T/Maker ... NCP
1051 ☐ Color Graphics Presentation 1.0 95.
☐ ClickArt (EPS and Bitmap available) ... call
Touchstone Software ... NCP
7420 ☐ Check It 3.0 89.
Traveling Software ... NCP
5179 ☐ LapLink III 3.0 95.
West Lake Data Corporation ... NCP
7577 ☐ PC-FullBak+ 2.0 52.
WordPerfect Corporation ... NCP
7781 ☐ LetterPerfect 1.0 129.
4214 ☐ WordPerfect Office PC 89.



Symantec ... NCP

2359 ☐ Norton Desktop for Windows—Complete Windows file management and utilities solution. Includes an enhanced file manager, the fastest and most automated Windows backup, and data recovery tools \$105.

3804 ☐ WordPerfect 5.1 \$265.
6685 ☐ DrawPerfect 1.1 279.
WordStar International ... NCP
1482 ☐ Correct Grammar 1.0 for Windows 65.
6791 ☐ WordStar Professional 6.0 199.
XTREE ... NCP
1202 ☐ XTree Easy 1.0 45.
6161 ☐ XTree Gold 2.0 95.
Z-Soft ... NCP
1626 ☐ Publisher's Paintbrush for Windows 299.

RECREATIONAL/EDUCATIONAL

Broderbund ... CP

8068 ☐ Where in the World is Carmen
San Diego Deluxe Edition 52.
1836 ☐ Where in America's Past is
Carmen San Diego 39.
5851 ☐ SimCity 33.
8886 ☐ SimEarth 45.
Electronic Arts ... NCP
4534 ☐ Mavis Beacon Teaches Typing 1.0 (CP) 35.
1334 ☐ Chuck Yeager Air Combat Trainer 42.
Harvard Associates ... NCP
2324 ☐ PC Logo 3.0 59.

HyperGlott Software ... NCP

(French, German, Italian, Spanish available.)
☐ Word Torture for Windows ea. 34.
☐ Word Torture 3.0 ea. 29.



TIMESLIPS ... NCP

2987 ☐ Timeslips III 4.0—Know exactly who owes you what with this time and expense billing system. Perfect for service professionals (accountants, lawyers, etc.) who need to track and bill their time \$195.

Microsoft ... NCP

7881 ☐ Entertainment Pack for Windows 1.0 29.
2858 ☐ Flight Simulator 4.0 39.
8270 ☐ Aircraft and Scenery Designer 1.0 29.
Microsoft Press (Books)
8129 Running Windows (2nd Edition) 22.
8136 Running Microsoft Excel 22.

Penton Overseas ... NCP

☐ VocabuLearn/ce Levels I & II (French, Italian, German, Spanish, Russian, Hebrew and Japanese) each 35.

Sierra ... CP

9466 ☐ Space Quest IV (VGA) 39.
7972 ☐ King's Quest V (VGA) 45.

SirTech ... CP

8235 ☐ Bone of the Cosmic Forge 39.

Software Toolworks ... NCP

☐ Chessmaster 2100 (CP) 35.
7372 ☐ World Atlas 2.0 42.

Stone & Associates ... NCP

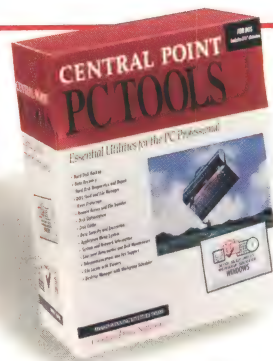
5231 ☐ Phonics Plus 1.1 22.
3439 ☐ 2nd Math 4.2 27.

Toyogo ... NCP

7674 ☐ Nemesis Go Master 4.7 41.
7676 ☐ Nemesis Go Master Deluxe 4.7 88.

True BASIC, Inc. ... NCP

☐ Kemeny/Kurtz Math Series each 45.



Central Point Software ... NCP

5039 ☐ PC Tools 7.0—A powerful group of integrated utilities, has more than a dozen major new functions as well as extensive Windows and Novell NetWare support \$115.

HARDWARE

Warranties listed next to manufacturer.

Acme/SAFE Power Systems ... 2 years

1948 Safe 300 199.
6747 Safe 400S 399.

American Power ... 2 years

7108 Smart UPS 400 339.
7105 Smart UPS 600 469.
6811 Back-UPS 360 219.
7106 Back-UPS 520 329.

ATI Technologies ... 2 years

9821 VGA Basic-16 (640 x 480, 16 colors) 85.
9985 VGA Integra (1024 x 768, 16 colors) 129.
9629 VGA Wonder XL (256K upgradable to 1MB) 199.
9619 Ultra/8514 Graphics Card (512K) (req. VGA) 419.
1838 Ultra/8514 & VGA (512K upgrade to 1 MB) 479.
1825 2400etc/i Modem (w/9600 SendFax) 139.
9620 9600etc/e Modem 379.

Boca Research ... 5 years

7001 BOCARAM/AT PLUS (0k) 119.
7150 BOCARAM/AT PLUS (2 Meg) 219.
7139 (4 Meg) 329. 7138 (8 Meg) 539.
6998 I/O Board for AT 59.
6999 I/O Board for Microchannel (S/S/P) 109.
8380 BasicVGA (256K, 640 x 480) 69.
8381 SuperVGA (1 Meg, 1024 x 768) 145.

Bravo Communications ... 2 years

2 Position Laser Compatible Switch Box. 109.

Brown-Wagh ... 1 year

8578 Creative Labs Sound Blaster 159.

Canon ... 1 year

We are an authorized Canon Service Center.

7894 BJ-10e Printer with free case (4.6 lb.) 329.
7897 BubbleJet Ink Cartridge (BJ-10e) 23.
7896 BJ-10e Sheet Feeder 75.
9828 BubbleJet Ink Cartridge (BJ-300 & BJ-330) 26.

CH Products ... 1 year

7801 FlightStick w/Falcon 49.
7345 Rollermouse (Trackball) serial 85. bus 99.

CoStar ... lifetime

The Organizer (mobile storage cart) 199.
1418 AddressWriter Envelope Printer 469.
1812 LabelWriter II Printer 195.

Curtis ... lifetime

9756 Keyboard Space Saver II KS-2 39.
1708 Ruby-Plus SPF-2+ 65.
7358 Command Center SPF-4 89.
Glass Filter Plus (specify size) each 65.

Cyrix Corporation ... 5 years

MATH COPROCESSORS

9875 FasMath 83D87-25 185.
9876 FasMath 83D87-33 195.
9877 FasMath 83S87-16 (SX compatible) 115.

16, 25, 33 MHz.



Inset Systems ... NCP

7298 ☒ **Hijaak 2.0**—Capture screens & convert graphics files with Hijaak release 2.0. New features include 5K pop-up window, many new raster & vector formats and support for more than 16 Group 3 fax devices. \$99.

Inner Media, Inc. ... NCP

8846 ☒ **Wide Angle 1.0 for Windows**. 69.

Inset Systems ... NCP

7298 ☒ **Hijaak 2.0** 99.

7300 ☒ **Inset Plus Hijaak** 125.

Insight Development ... NCP

8320 ☒ **PrintTools 1.0** 85.

Intuit ... NCP

2426 ☒ **Quicken 4.0** 39.

1856 ☒ **QuickPay 1.0** 35.

LaserTools ... NCP

6882 ☒ **PrintCache 2.3** 99.

Lotus ... NCP

5417 ☐ 1-2-3 3.1 Plus. 429.

5653 ☐ 1-2-3 2.3 349.

1852 ☐ 1-2-3 2.3 Upgrade 95.

5799 ☒ **Ami Pro 2.0** 309.

1847 ☒ **Ami Pro Competitive Upgrade**. 119.

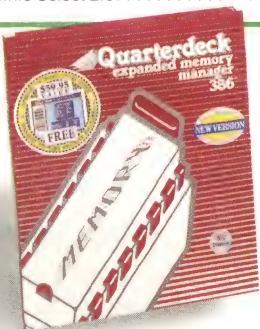
1621 ☐ **Freelance Graphics for DOS 4.0** 329.

MECA ... NCP

2798 ☐ **Managing Your Money 7.0** 99.

Micro Logic ... NCP

6787 ☒ **Info Select 2.0** 95.



Quarterdeck ... NCP

3221 ☐ **Expanded Memory Manager 386 5.1**—Release the hidden power of DOS 5! QEMM finds hidden memory DOS 5 can't see & speeds up your computer dramatically. Incl. Manifest, the award-winning diagnostic program free \$65.

Microcom ... NCP

7649 ☒ **Virex-PC 2.0** \$79.

6234 ☒ **CarbonCopy Plus 6.0** 119.

Microlytics ... NCP

9636 ☒ **Strunk & White Elements of Style 1.0** ... 35.

7931 ☐ **Random House Encyclopedia 1.0** ... 68.

Microsoft ... NCP

2894 ☐ **QuickBasic 4.5** 69.

7010 ☐ **Windows 3.0** 99.

7388 ☒ **Project 1.0 for Windows** 459.

7882 ☐ **Productivity Pack 1.0 for Windows** ... 45.

2904 ☐ **Works 2.0** 99.

2901 ☐ **Word 5.5** 209.

7387 ☒ **PowerPoint 2.0 for Windows** 329.

6195 ☒ **Word 1.1 for Windows** 329.

2856 ☒ **Excel 3.0 for Windows** 329.

8137 ☐ **Office for Windows (includes Excel, PC Mail, Word for Windows, and PowerPoint)** ... 499.

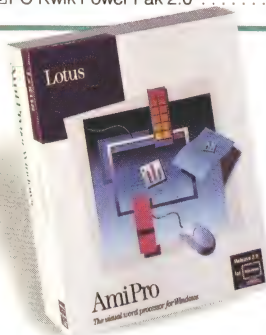
2853 ☐ **C Compiler 6.0** 329.

1620 ☐ **DOS 5.0 Upgrade** 65.

1624 ☒ **Visual Basic 1.0** 139.

Multisoft ... NCP

4925 ☒ **PC-Kwik Power Pak 2.0** 75.



Lotus ... NCP

5799 ☒ **Ami Pro 2.0**—Powerful & visual word processing for Windows made easy! Includes customizable SmartIcons for one click access to often used features, outlining, tables, drawing, a full macro language, & much more \$309.

Nolo Press ... NCP

5122 ☒ **For The Record 2.0** 35.

2982 ☒ **WillMaker 4.0** 39.

OCR Systems ... NCP

9879 ☒ **ReadRight 2.01** 309.

9878 ☒ **ReadRight 3.0 for Windows** 309.

Okna ... NCP

9696 ☒ **Desktop Set 3.0 for Windows** 85.

Passport Design ... NCP

1329 ☐ **Encore 2.0** 379.

PC Globe ... NCP

5902 ☐ **PC Globe 4.0** 39.

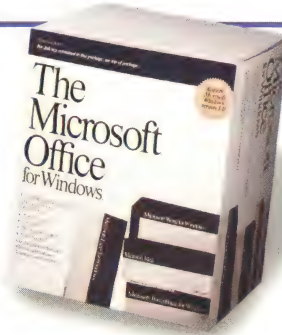
5900 ☐ **PC USA 2.0** 39.

Personics ... NCP

9288 ☐ **Laptop Ultravision 2.1 (3 1/2" only)**. 49.

4384 ☒ **Ultravision 2.0** 79.

7048 ☐ **Monarch 1.0** 319.



Microsoft ... NCP

8137 ☐ **Office for Windows**—The best bundle of applications for Windows just got better. Now includes PC Mail (requires AppleTalk network running Microsoft Mail), Excel 3.0, PowerPoint, & Word for Windows at a new low price \$499.

PowerUp ... NCP

7861 ☒ **Address Book Plus 3.0** 49.

7860 ☒ **Calendar Creator Plus 4.0** 52.

7857 ☒ **Labels Unlimited 3.0** 59.

7858 ☒ **Express Publisher 2.0** 89.

Precision Software ... NCP

6600 ☒ **Superbase 4 for Windows 1.3** 429.

Qualitas ... NCP

7539 ☐ **386MAX 5.1** 75.

7967 ☐ **BlueMAX 5.1 for PS/2 (3 1/2" only)**. 85.

Quarterdeck ... NCP

6422 ☐ **QRAM 1.0** 54.

3221 ☐ **Expanded Memory Mgr. 386 5.1** 65.

3220 ☐ **DESQView 2.3** 85.

4586 ☐ **DESQView 386 2.3** 145.

QUE Software ... NCP

4155 ☒ **RightWriter 4.0** 54.

1857 ☒ **RightWriter 4.0 Network** 169.

Reality Technologies ... NCP

7891 ☒ **WealthStarter 1.0** 39.

6572 ☒ **WealthBuilder 1.1** 99.

Reference Software ... NCP

4396 ☒ **Grammatik IV 2.0** 59.

7483 ☒ **Grammatik for Windows 2.0** 59.

Revolution Software ... NCP

4480 ☒ **VGA Dimmer 3.0 (screen saver)** 29.

Roykore ... NCP

8162 ☒ **ABC Flowcharter 1.1** 189.

Sitka ... NCP

6675 ☐ **TOPS Network Bundle 3.0** 159.

3720 ☐ **Flashcard 2.1 (AppleTalk network card)** . 155.

7330 ☐ **Flashcard MicroChannel** 219.

Softlogic Solutions ... NCP

3542 ☐ **Software Carousel 5.0** 55.

Software Publishing ... NCP

3496 ☐ **Professional Write 2.2** 169.

9638 ☐ **Professional Write Plus 1.0** 169.

9490 ☒ **Harvard Graphics 1.0** 269.

3482 ☐ **Harvard Graphics 3.0 (limited time)** ... 359.

Software Toolworks ... NCP

9859 ☒ **Word for Word/Windows 4.2** 47.

9860 ☐ **Word for Word/Professional 1.0** 89.

Solution Systems ... NCP

7977 ☐ **Brief 3.1 (Programmer's Editor)** 189.

Spinnaker ... NCP

1415 ☒ **PFS: WindowWorks 1.0** 129.

7604 ☒ **PLUS for Windows 2.0** 289.

Stac Electronics ... NCP

1409 ☐ **Stacker 1.1** 89.

1-800/243-8088

MMC
Member of the Direct Marketing Association, Inc.

PC Connection

880W

6 Mill Street
Marlow, NH 03456

SALES 603/446-7721 FAX 603/446-7791

PC CONNECTION®

YOUR



FREE



PowerBase** DISK



The PowerBase ** diskette is offered solely by PC World Magazine. It should not be confused with 'power-base,' which is relational database software offered by Compuware Corporation.

Get a free disk just
for subscribing to
PC World. Tap into
42 of our readers'
all-time favorite
utilities from
"Star-Dot-Star,"
PC World's monthly
How-To forum.

YES! Please enter my subscription to PC World for 12 monthly issues at the preferred rate of only \$19.97. I'll save 33% off the regular subscription rate and 58% off the annual newsstand price. I'll also receive my PowerBase Disk absolutely free!**

NAME _____
COMPANY _____
ADDRESS _____
CITY / STATE / ZIP _____

Annual newsstand price, \$47.40; basic subscription rate, \$29.90. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

PC WORLD

4F474

You get fast,
easy new tricks
for WordPerfect,
WordStar, DOS,
Lotus 1-2-3,
dBase,
Turbo Pascal,
Turbo C, Basic
and more!

YES! Please enter my subscription to PC World for 12 monthly issues at the preferred rate of only \$19.97. I'll save 33% off the regular subscription rate and 58% off the annual newsstand price. I'll also receive my PowerBase Disk absolutely free!**

NAME _____
COMPANY _____
ADDRESS _____
CITY / STATE / ZIP _____

Annual newsstand price, \$47.40; basic subscription rate, \$29.90. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

PC WORLD

4F474

These 42 time-
saving utilities
are not available
in any store, but
they can be yours—
**FREE— just for
subscribing to
PC World.**

YES! Please enter my subscription to PC World for 12 monthly issues at the preferred rate of only \$19.97. I'll save 33% off the regular subscription rate and 58% off the annual newsstand price. I'll also receive my PowerBase Disk absolutely free!**

NAME _____
COMPANY _____
ADDRESS _____
CITY / STATE / ZIP _____

Annual newsstand price, \$47.40; basic subscription rate, \$29.90. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.

PC WORLD

4F474

Attention:
Recipient is entitled to
42 FREE utilities plus
33% off
the regular
subscription rate.

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833



Attention:
Recipient is entitled to
42 FREE utilities plus
33% off
the regular
subscription rate.

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833



Attention:
Recipient is entitled to
42 FREE utilities plus
33% off
the regular
subscription rate.

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Subscription Department
P.O. Box 51833
Boulder, Colorado 80321-1833



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



You get
more
out of it
because
we put
more
into it

You get more out of your computer with PC World. Because every issue is crammed with hands-on tutorials, free programs, product reviews, advice, tips and techniques designed to help you get the most out of your system.

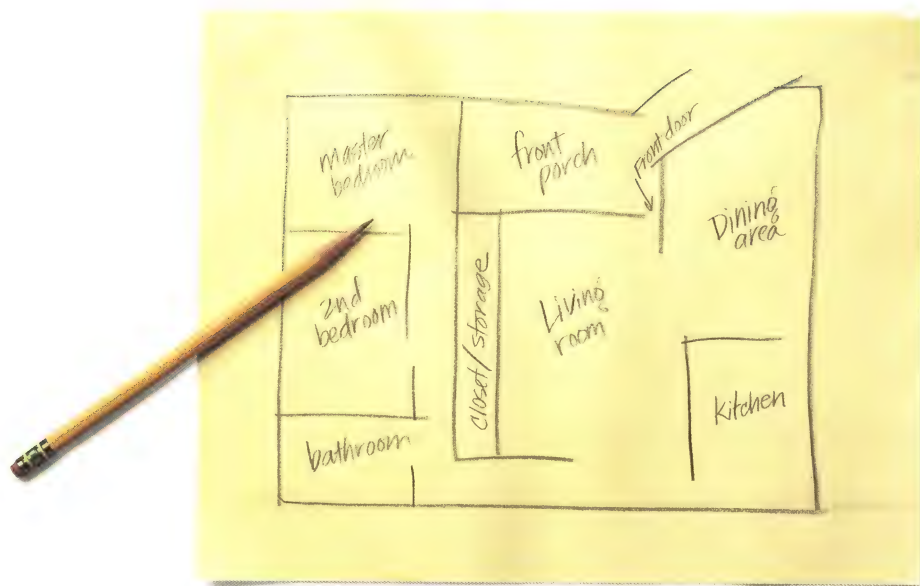


**Receive the
PowerBase**
Disk FREE
when you
subscribe**

Now you can get this handy, menu-driven disk which contains the best of "Star-Dot-Star"—PC World's popular monthly forum for readers' how-to's—absolutely FREE when you subscribe to PC World. Your disk contains invaluable time-and work-saving macros and utilities for such popular programs as WordPerfect...WordStar...dBase...Lotus 1-2-3... and others.

To get your free disk, simply fill out the subscription card on the reverse side. Do it today!

Now Available
23 Symbol Libraries for under \$50.00 each
Call 1-800-223-2521 for details



Sketch.



AutoSketch®.

If you can sketch, you can AutoSketch.

Which gives you real CAD power — speed, accuracy and easy revisions — all without a long, drawn-out learning curve.

With AutoSketch Version 3, you have our easiest CAD yet with pull-down menus and on-screen icons. You also have DXF™

U.S. \$249



file compatibility and associative dimensioning. It's what you'd expect from the makers of AutoCAD®, the world's most popular CAD package.

Go ahead. Give it a try — demo version available for just \$9.95. Call us at 1-800-223-2521 for more information.

We'll sketch in the details.

 **AUTODESK**

Autodesk, AutoCAD, AutoSketch and the Autodesk logo are registered trademarks and DXF is a trademark of Autodesk, Inc. ©1990 Autodesk, Inc.

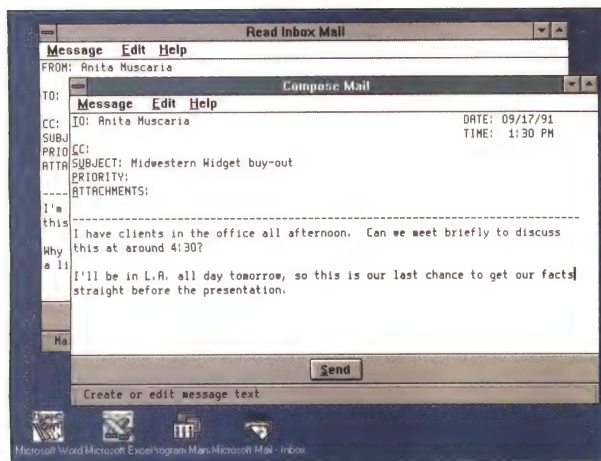
Circle 99 on reader service card

Microsoft Mail 2.1

PROS: Easy to use, powerful message management, full-text search, optional archive utility

CONS: Search doesn't display message list, no scheduler

WINDOWS Though Microsoft is new to the PC E-mail game, *Microsoft*



Microsoft Mail for Windows lets you switch between separate fixed-size windows for reading messages and composing replies.

Mail isn't—the company recently purchased *The Network Courier* and repackaged it with only minor changes. *Microsoft Mail* shares its predecessor's superb messaging skills and easy operation but hasn't yet inherited *Courier's* broad range of connectivity add-ons. That omission keeps *Microsoft Mail* from being a Best Buy.

You can't decide whether to go DOS or *Windows*? *MS Mail* gives you both. The DOS version lets you tag selected folders and search the titles and contents of messages for a short phrase. (Unfortunately, it doesn't display a list of the relevant messages—you have to page through each one.) You can restrict access to a

shared folder, making private on-line meetings easier. When a new person joins the discussion, he or she can get up to speed by reviewing the accumulated messages.

The *Windows* version lacks most of these tricks but adds a few of its own. You can create folders within folders, handy for multifaceted projects. You can't read more than one message at a time, but separate read and compose windows let you flip back to read a message as you draft your reply.

At press time, the only connectivity option available was the bundled LAN-to-LAN gateway, which lacks directory exchange, and there's no group scheduling option. (Microsoft says remote access and other gateway options will be available by the time you read this.)

Microsoft Mail is a fine choice for small LANs that can live without broad connectivity options and group scheduling. Once Microsoft supplies these missing features, *Mail* will be a serious contender for the Best Buy crown.

Announcing A Better, Smarter, Faster,

NEW 2.0 FOR DOS & WINDOWS!

Why did we make the #1 grammar and style checker better, smarter, and faster? Well, we've sold over 600,000 copies of *Grammatik*™ because it's the easiest way to improve your writing. And the only way to make it even easier, was to make it even better. Introducing *Grammatik IV 2.0* for DOS, and *Grammatik Windows 2.0*.

More Speed. Now *Grammatik* works just like the spelling checker inside *WordPerfect 5.0/5.1* and the upcoming *WordPerfect* for *Windows*. Simply tap a hot key or click your mouse inside *WordPerfect*. In seconds, *Grammatik* proofreads every sentence in your document. It checks for thousands of errors in grammar, style, syntax, improper sentence construction, subject/verb agreement, passive voice, spelling and more. (It even checks personal words and abbreviations you've added to your *WordPerfect* User's Personal Spelling Dictionary.)

WordPerfect Office 3.0

PROS: Works well with WordPerfect, comes with personal productivity tools

CONS: No folders, no search, no remote dial-in

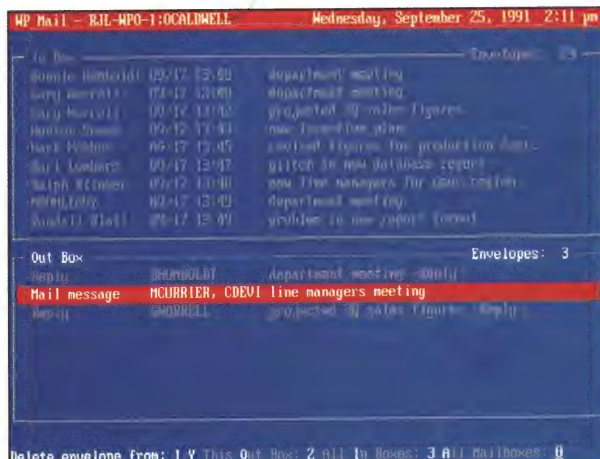
WordPerfect Office is designed as a multifaceted control center for all your DOS applications. You get a *PC Tools*-like bundle of personal utilities, plus E-mail and group scheduling. But while *Office*'s data base, file manager, and scheduler are solid, its E-mail is crippled by a lack of message management tools.

WordPerfect users will feel right at home in this *Office*. Both employ the same keyboard shortcuts, and it's easy to paste text from one program into the other. You can tag addressees, copies, and blind copies in one pass on the user list and save the whole selection as a mailing list. You can see exactly when a message was delivered, read, and deleted. If you delete it from your "outbox" before it's read, the other person will

never have to see it—which is a unique safeguard against overly hasty replies to your coworkers' messages.

The group scheduler couldn't be much easier. You can view free time via a bar chart or bring up a list of all users' free periods for a specified number of days. When prospective participants open their personal calendars, the proposed meeting is displayed, along with a menu asking them to accept the meeting, reject it, or request more time before deciding.

There's just one glaring omission from the *WordPerfect Office* suite: message management. It offers no folders, no keywords, no search. You can't even sort the in-box. All you can do is save



WordPerfect Office lets you delete a message you sent before your intended recipient reads it.

messages to text files—which is really bad news if you get more than a few messages a day.

WordPerfect users who need E-mail and scheduling help might be tempted to put up with the program's lack of message management tools. For most users, however, *Office* is not the best choice. ☹

Grammatik™

Grammar & Style Checker.

Reference Software™

Easier Way To Improve Your Writing.

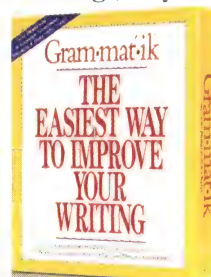
With new Grammatik, checking all your writing is as fast and easy as just checking your spelling.

More Smarts. Because Grammatik IV 2.0 and Grammatik Windows 2.0 are now smarter, writing improvement is now easier. You can add writing rules that are unique to you or your business. You get easier to understand on-line grammar and style advice that helps you discover where you went wrong, and how to correct your mistakes. And, with expanded network support in the Business Pack, your entire workgroup can safely write smarter, right away.

WHOOOPS!
More Better. Everyone makes mistakes. But now that Grammatik is faster and smarter, its proofreading (and your writing) will be better than ever. So improve your writing the easy way, get new Grammatik IV 2.0 for DOS or Grammatik Windows 2.0. See your software dealer or call

SAVE \$10!

See your dealer for details
or call (800) 872-9933 for more information.



30-Day Write Better Or Your Money Back Guarantee*

EXECUTIVE SUMMARY

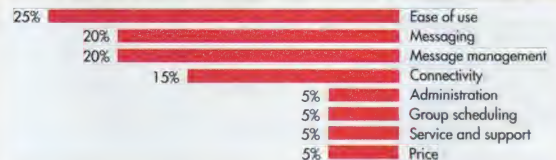
cc:Mail Earns the Stamp of Approval

Whether you use DOS or Windows, cc:Mail gives you everything you need for easy-to-use E-mail.



With top-notch message capabilities and broad connectivity options, Best Buy **cc:Mail** is the top E-mail solution for LANs large and small. **Da Vinci** also impresses, though its lack of folders makes it impractical for users who need to manage heavy message traffic. And look out for **Microsoft Mail**—once its remote, fax, and MHS connectivity gateways arrive, it will be a major contender for the E-mail crown.

Key Buying Issues: Percentage of Importance



	Reader service no.	Ease of use	Messaging	Message management	Connectivity	Administration	Group scheduling	Service and support	Price	Overall value
cc:Mail for MS-DOS 3.2 ¹ cc:Mail for Windows 1.0	666	★★★★	★★★★	★★★★	★★★★	★★½	★★½	★★½	★★★★	★★★★
Da Vinci eMail for DOS 1.7 ¹ Da Vinci eMail for Windows 1.8	668	☆☆☆☆	☆☆☆☆	☆☆	☆☆☆☆	☆☆☆☆	☆☆½	☆☆☆☆	☆☆☆☆	★★★★½
Microsoft Mail for PC Networks 2.1 ¹	671	☆☆☆☆	☆☆½	☆☆☆☆	☆☆	☆☆	½	☆☆	☆☆	★★★
Higgins 2.4	669	☆☆½	☆☆½	☆☆	☆☆☆☆	☆☆	☆☆☆☆	☆☆	☆☆	★★½
InBox Plus for DOS 3.0	670	☆☆½	☆☆☆☆	☆☆	½	☆☆	½	☆☆☆☆	☆☆	★★½
WordPerfect Office 3.0	672	☆☆½	☆☆☆☆	½	☆☆	☆☆☆☆	☆☆☆☆	☆☆½	☆☆½	★★½
The Coordinator II 2.10	667	☆☆	☆☆	☆☆	☆☆½	½	☆☆	☆☆½	☆☆	★★

¹ Ratings for DOS and Windows versions were averaged.

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

cc:Mail

cc:Mail
2141 Landings Dr.
Mountain View, CA
94043
800/448-2500
415/960-0840 (fax)
LIST PRICE: DOS
\$195, Windows \$495;
additional 8 users
\$195; 25 users \$595
Reader service no. 666

The Coordinator II 2.10

Action Technologies
1145 Atlantic Ave.
Alameda, CA 94501
415/521-6190,
415/769-0596 (fax)

LIST PRICE: 10 users
\$1800, 30 users
\$3000, 50 users
\$4500, 100 users
\$7500
Reader service no. 667

Da Vinci eMail

Da Vinci Systems
P.O. Box 17449
Raleigh, NC 27609
800/328-4624,
919/787-3550 (fax)
LIST PRICE: DOS
version 8 users \$295,
30 users \$895,
unlimited on single
server \$1495;
Windows version 8
users \$445, 30 users
\$1095, unlimited on

single server \$1595
Reader service no. 668

Higgins 2.4

Enable Software/
Higgins Group
1150 Marina Village
Pkwy. #101
Alameda, CA 94501
800/854-2807
LIST PRICE: first 8
users \$695; additional
8 users \$349, 12 users
\$995, 20 users \$1495
Reader service no. 669

InBox Plus 3.0

Sitka Corp.
950 Marina Village

Pkwy.
Alameda, CA 94501
800/445-8677,
415/769-8771 (fax)
LIST PRICE: 50 users
\$995, 100 users
\$1995, 250 users
\$5995
Reader service no. 670

Microsoft Mail 2.1

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052
800/227-4679
LIST PRICE: \$695 per
server plus \$395 per 5
users, \$1349 per 20,
\$5500 per 100,
\$22,500 per 500
Reader service no. 671

WordPerfect Office 3.0

WordPerfect Corp.
1555 N. Technology
Way
Orem, UT 84057
801/225-5000,
801/222-5077 (fax)
LIST PRICE: 5 users
\$495, 20 users \$1495
Reader service no. 672

For more information about all products in this article, circle reader service no. 904

It's probably because they want to avoid comparison. Next to our SyncMaster™ 4 the differences become very apparent. Our flat screen EVGA monitor lets you have a full inch more than the NEC Multisync® 4D, yet it sells for the same price.

With its 17" display, the SyncMaster 4 gives you more space to create in, from larger windows to more legible text. And the flat surface screen does it all without the strain-producing glare you get from round face displays like the Multisync 4D. When

you include its additional up front controls for easy access, our SyncMaster 4 is the clear choice.

And the SyncMaster 4 is backed by Samsung, the world's largest monitor manufacturer and the 20th largest corporation worldwide.

So if you want to see your EVGA graphics come to life, look at a Samsung. Then call 1-800-624-8999, extension 85 for your nearest dealer.

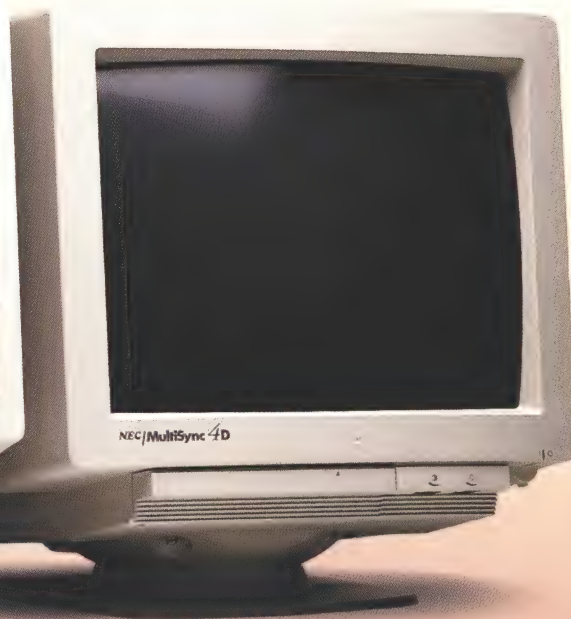
It won't be hard to tell the difference.

	<i>Samsung SyncMaster 4</i>	<i>NEC Multisync 4D</i>
<i>CRT Diagonal size</i>	17 inches	16 inches
<i>Maximum Display size</i>	300mm x 224mm (HxV)	290mm x 217mm (HxV)
<i>Screen type</i>	Flat face	Round face
<i>Cabinet depth</i>	453mm	475mm
<i>Controls</i>	On/off up front Degauss up front pincusion up front	On/off recessed Degauss in back None
<i>Modes</i>	Supports EGA	None

Now you know why they don't show screen graphics in their ads.



Samsung 17" flat screen SyncMaster 4



NEC 16" round screen Multisync 4D

Unretouched Photography.



Technology that works for life.

All brand and product names are Trademarks or Registered Trademarks of their respective companies. Copyright 1991 Samsung Information Systems America, Inc.

Circle 265 on reader service card

ON SITE:

STEAL THE SHOW

ANDY FREIBERG



Since New York Life Insurance agent Jack Healey started using his laptop as a sales tool, his client roster and his income have more than doubled.

Laptops

How laptop presentations made it possible for 4000 New York Life Insurance agents to shorten their sales cycles and fatten their wallets.

Bronwyn Fryer

When you're in the brutally competitive business of selling life insurance, you need all the help you can get. Today, more than 2400 companies nationwide, each offering a smorgasbord of policies, vie for a limited number of high-income clients.

Though closing a sale quickly is critical to their success, many life insurance agents waste precious selling time using manual methods to gather client information, analyze an insurance need, and develop a presentation. "All this makes

room for competitors to come in or for prospects to change their minds," says Jack Healey, a 30-year veteran of New York Life Insurance Company. "By the time you go in for your second or third meeting, the sales potential's lost its pizzazz."

New York Life's innovative solution to this problem has boosted Healey's personal profits and the company's overall business. The solution, called NYLExpress (New York Life Express), is the company's automated sales support sys-

tem. With NYLEExpress, the average number of sales calls agents make has risen by 20 percent while the number of closings has gone up by 30 percent. Healey's client roster alone tells the story: Before acquiring NYLEExpress, Healey had fewer than 2000 clients. Today, his client data base has 3500 entries and is growing every day.

At the heart of NYLEExpress is an interactive graphical presentation system on laptop computers. With a laptop presentation, a client can quickly grasp the complex decisions associated with a given policy. "People are too proud to say they don't understand numbers," says Healey. "With the graphics, they can immediately understand what all those numbers mean." And, he notes, the computer imbues the presentation with authority and credibility. "People believe computers."

The Laptop Option

In the pre-PC days, Healey would interview prospects at their home or office, manually taking notes on the prospect's vital statistics and financial situation. Then he would return to his office and use a calculator and a pencil to figure out which insurance policy might be best for the client. Complex calculations—taking into account a client's current and future financial status, projected interest rates, and premium payments over a lifetime—could often be rife with errors. If the client asked for an alternative policy, Healey would have to repeat the process. Since presentations usually consisted of showing the client pieces of paper with columns of complicated numbers, a given policy was difficult both for the client to understand and for Healey to explain. "A two-cycle sale was the best an agent could hope for," he recalls. "A complex agreement could go on for a year."

Processing added more time to the sales cycle. By the time the application was keyed in to a mainframe, corrected, processed, and accepted, the policy could have taken up to eight weeks to be completed. Correspondence with the

home office by mail and telephone also wasted time.

In 1985 New York Life began addressing these issues to make its agents more productive. Management started by subsidizing agents' purchase of PCs, printers, and software and establishing a remote mainframe connection. The company also bought custom-built needs-analysis software for agents.



PROBLEM:

- Long sales cycle
- Six- to eight-week application processing time
- Complex insurance policies to learn and explain

SOLUTION:

- NYLEExpress (New York Life Express)—a combination of personal computers, custom and off-the-shelf software, and remote communication to the company mainframe
- Laptops for client-site presentations

BENEFITS:

- 20 percent more sales calls, 30 percent more sales closings
- Easy for clients to understand complex insurance concepts
- Shortened processing time

Three years later management gave agents a boost by providing them with laptop computers, which would allow them to prepare interactive presentations for their clients. The company experimented with 40MB Zenith laptops with black-and-white screens. As the number of applications grew and 386 laptops became available, the company standardized on NEC 386SX laptops with color screens.

A Laptop Slide Show

The laptops come with a 100MB hard disk to hold a suite of both custom and off-the-shelf graphics and needs-analysis programs, and a 2400-baud modem that allows agents to connect to the home office. Even agents who have never touched a computer can use the laptops to demonstrate the company's strengths, key in a client's vital statistics, such as age, number of children, income, assets, and liabilities, and accurately compute the client's insurance needs. The agents can also present the data in an easy-to-understand, graphical form.

When Healey sits down with a client and turns on the laptop, an opening "slide show" about New York Life presents the company's strengths. Then Healey presses a key to access *FNA*, an interactive presentation and needs-analysis application developed for New York Life by Vernon Publishing Company. The program allows Healey—or the client—to enter personal financial information on a series of colorful, easy-to-read screens.

As the information is entered, successive screens personalize the session by incorporating the client's name and basing responses on previous answers. For example, depending on whether the client rents or owns a home, successive screens will use the words *rent* or *mortgage*.

If a client is considering estate planning or business insurance, Healey uses another custom presentation program, developed by Impact Technologies, to determine the appropriate amount of insurance. Because it's easy to use, the *Impact* program also doubles as a training tool for new agents, who can use it to teach a client—and themselves—about complex insurance concepts. Another insurance industry-specific program that performs complex calculations, *Isis*, allows Healey to match a client's needs to the most appropriate New York Life insurance policy.

Healey likes to quote from Isaac Kibrick, a nineteenth-century Russian

A Picture Is Worth a Thousand Words

Even math-minded prospects have a hard time deciphering columns of life insurance data (Figure 1). With the help of an interactive graphical presentation on a laptop computer and a color printout they can review later (Figure 2), prospects can understand even the most complex insurance concepts.



Figure 1

Figure 2

immigrant who became New York Life's top salesperson: "Look for the loss." "People need to understand that they're losing money by not buying life insurance," Healey explains. "You have to show them how." To do so, he uses his technological "toys."

Since prospects have a tough time understanding dizzying tables full of numbers, Healey shows the loss with a custom color graph of projected insurance benefits. Using Alpha Software's *Keywords*, Healey transfers the numbers into a 1-2-3 spreadsheet for further manipulation. "I can work out the accumulation of a given premium over the years," says Healey. "After that, I import it into *Harvard Graphics* and produce a personalized color graph illustrating, for example, the client's net death benefit, net cash value, and premium over a 20-year period."

The Jersey Connection

In the days before NYLEExpress, Healey relied on the San Francisco office's data processing pool to key in data from a handwritten application and then upload it to a mainframe in Clinton, New Jersey. Now, once a sale is complete, he can do all the necessary data processing himself by connecting his laptop to the mainframe by modem from the client's site.

To make the connection, Healey dials in via modem to the San Francisco sales office's IBM Series/1 minicomputer, which connects to the corporate mainframe. "The dial-in connection lets me inquire about past policies, check on the status of an application, send and re-

ceive E-mail and update the client records. I've got everything I need."

A new addendum to NYLEExpress is an on-line application-approval system that lets Healey determine immediately whether the company can issue the client's policy. If the answer is yes, Healey can upload the completed application and approve the policy on the spot.

When he's not visiting clients, Healey relies on the less portable tools that reside in his 31st-floor office in San Francisco: an IBM 386 with 120MB of memory, a VGA monitor, an internal Hayes 9600-baud modem, and two Hewlett-Packard printers—a LaserJet for correspondence, and a PaintJet for color presentation output. Aside from the NYLEExpress software, Healey uses a variety of off-the-shelf word processing, spreadsheet, graphics, sales tracking, and desktop organizer packages provided by New York Life. "When my clients visit me in the office, I can create custom presentations for them in *Harvard Graphics* and simply print them out on the PaintJet," says Healey. "That way, they can take the presentation home to keep."

Big Benefits

The NYLEExpress system has made clinching the sale easier, Healey says. His client roster—and his income—have nearly doubled as a result. The graphical presentations have also resulted in ongoing business because, he notes, "clients maintain policies they can understand."

The flexible applications have helped Healey find profitable solutions for his

clients that would have been impossible to figure out previously. For example, he's been able to graphically contrast a *term* (standard protection) policy with a slightly more expensive whole-life policy that creates savings in the long run. "I show how a whole-life policy can, when taking away the cost of term insurance, pay more than 12 percent compound interest over 20 years and how clients can reap this benefit by investing a few more dollars than they would for a term policy," Healey's solution has netted him a tidy \$30,000 in additional commissions in four months.

The system also serves as a valuable learning tool for novice insurance agents, who use the laptop slide shows to reinforce their knowledge of the company's products while they give the demonstrations. "The insurance business has grown very complex," explains New York Life corporate vice president Victor Mutnick. "Our agents must be able to explain our policies to their clients in an understandable way."

Being able to control the sales process from start to finish without having to rely on the data processing pool makes New York Life salespeople better at what they do. "The NYLEExpress system puts the responsibility for accuracy back where it belongs—with the salesperson," Healey concludes. "It eliminates mistakes, it cuts sales time in half, it adds credibility with the client and dollars to your bottom line. What more could you want?" ■

Bronwyn Fryer is an associate editor for PC World.

“I can’t work my VCR
and they’re expecting me
to understand this!”

– Helen Lynch, Secretary

“This was a big
investment.
I’m still waiting for
the big return.”

– Susan Shirk, CEO

“I thought you said
these were going to
increase productivity.”

– Matt Sentell, Office Manager

Presenting a c company created

During the 1980s, personal computer use increased by over 5000%. Even so, some industries saw productivity increase by as little as one percent.

Surprised? Probably not, if you've been listening to the complaints from people around your office. Most often, you hear that the computers are difficult to work with or too hard to learn.

That's where we come in. We're ExecuTrain, the largest computer training company in the country, with over 50 locations in the U.S. and one in the United Kingdom. And we got here by helping companies like yours get the most out of personal computers.

What's our secret? It's

actually pretty simple. We figure if we

design the ExecuTrain course manuals to take things concept-by-concept and also hire some of the best instructors in the business, we'll end up with a training program that can't be beat.

Let's say you were going to take one of our classes. The first thing you'd notice is that we usually allow only 10 stu-

dents in each class. That way, if you have a question about something, our instructor can be by

your side in a flash. And all our rooms come equipped with personal computers, an overhead, a marker board, as well as a special projector that shows the

instructor's computer on a large screen.

We'll be the first to tell you that we buy some of the most advanced equipment for our classrooms. Even so, our most valuable classroom features can't be bought in a store. They're our instructors. And each one is hired based on his or her ability to do one thing: Communicate. After all, we can teach anyone to be an expert on a computer. But being able to communicate to a roomful of students is a talent that only a few people have.

Once our instructors have introduced you to your equipment, they'll introduce you to our courseware. It has a diskette for you to use in your practice sessions and a course manual that makes learning pro-

We've spent years developing a nationwide system of computer training centers designed to help you get the most from your computer software.



These should be tools of the trade, not obstacles. Which is why we developed one of the most comprehensive, nationwide training programs around.

Here are some of the courses we offer.
Introduction to Computers
Overview of PCs
Microsoft® Windows™
DOS™
Microsoft® Word
Word for Windows™
MultiMate Advantage II™
WordPerfect®
Microsoft® Project
PageMaker®
Ventura Publisher®
Paradox®
dBase III Plus™
dBase IV™
Microsoft Excel®
Lotus 1-2-3®
Freelance Plus®
Harvard Graphics™
Quattro Pro™
And many more.



When it comes to clear course manuals, ExecuTrain wrote the book.



Computer training by popular complaint.

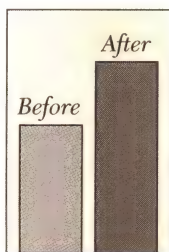


Our instructors are hired based on how well they communicate. You can count on being taught by an expert with a gift for clear, patient instruction.

By the time you're through with the ExecuTrain training program, you'll walk out with three things. The first will be the ability to work your way inside and out of your PC software. The second will be your diskette and course manual. And the third

grams such as Lotus 1-2-3® as simple as learning your ABCs.

One of the best things about our course manuals is that each page covers one single concept. No longwinded computerese here. Just straight talk about whatever it is you're working on.



One study showed that you could see up to a 50% improvement in capability for inexperienced users after only one day of computer training.

will be our telephone number, which you can use as often as you like when you need one of our experts to refresh your memory about the software you were trained on.

Our training program also includes our money-back guarantee. It says, in plain English, that if you're not satisfied with the

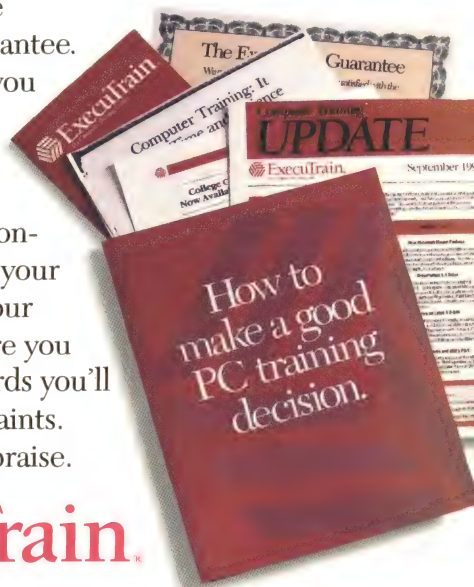
results of our program, we'll offer you free refresher courses until you're satisfied, or your money back. Guarantees like that don't come along very often.

Which is just one more reason to pick up your phone and give us a call. We'll send you a free PC Training Productivity Package that includes a checklist on how to make a good PC training decision, plus a brochure, a schedule of classes in your area, a newsletter, and a copy of the ExecuTrain Guarantee.

What are you waiting for? We're ready to help you get the most from your personal computer. So sign your office up for one of our programs. And before you know it, the only words you'll hear won't be complaints. They'll be words of praise.



Our guarantee says, plain and simple, that if you're not satisfied with our program, we'll offer you free refresher courses, or your money back. We also have unlimited phone support in case you have questions about the software you were trained on.*



ExecuTrain
The Computer Training Leader

1-800-535-9479, ext. 10

©1991 ExecuTrain Corporation. All Rights Reserved. ExecuTrain and the ExecuTrain logo are registered trademarks of ExecuTrain Corporation. Lotus 1-2-3 is a registered trademark of the Lotus Development Corporation. All other brand and product names are trademarks or registered trademarks of their respective owners. *See the ExecuTrain Guarantee for details.

Circle 80 on reader service card

Notebook PCs

Learn what six veteran users have to say about ultralight laptops from Compaq, Toshiba, and Texas Instruments.

Alice LaPlante

Who says you can't take it with you?

Not our road testers, who regularly travel with some of the leading notebook PCs (which we define as systems weighing less than 10 pounds when fully equipped).

Sure, there are compromises. The keyboards can be cramped, battery life isn't what it's cracked up to be, and as for weight—well, you might say manufacturers fudge those specs a bit.

But even the compromises wouldn't convince the users we spoke with to trade in their lighter, more powerful notebooks for the laptops of yesterday. Some have even shucked off their desktop systems in favor of a one-size-does-all notebook that, with a few additions, converts to a usable desktop PC.

Of the three notebooks evaluated here, two are 386SX-based systems, the Compaq LTE/386 and the Texas Instruments TravelMate 3000. We also spoke with users of Toshiba's 286 notebook, the T1200XE, since the company's 386SX notebook had barely hit the streets by press time (see "286 Notebooks: Traveling Light" in this issue for a review of the T1200XE). Regardless of the class of system they used, though, performance wasn't a primary concern for our road testers. All the systems received relatively high marks in this category.



The same can't be said of battery life, though, which consistently received the lowest grades of any notebook features. More than one user reported finding, to their dismay and aggravation, that their notebook's battery died long before their plane ever touched the tarmac.

Are *you* willing to accept the compromises? Read on, and then decide.

COMPAQ LTE/386

Alice Goldberg

Alice travels to Ciba Geigy sites around the country doing management consulting. She also works frequently at home, and the LTE is her only PC.

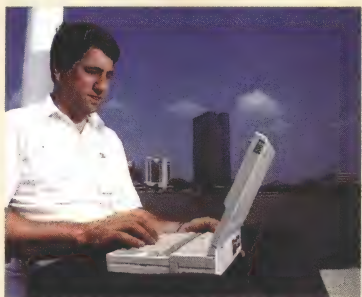
I love being able to pull my machine from the docking station and take it home or on the road without having to worry about whether I have everything with me. Switching between a desktop and a notebook was very cumbersome.

For the functionality the LTE offers, it's very portable. The Poquet (my previous notebook) wasn't adequate for presentations, so I used to carry a larger laptop with me when I had to do a demo. The battery lasts between 2 and 3 hours, which is usually enough to work on a plane without worrying about it running out.

It was a little hard giving up my desktop system, but in practice it hasn't made much of a difference, because I use the docking station and a VGA mon-



Name: Alice Goldberg
Position: Senior consultant
Company: Ciba Geigy, Ardsley, New York
Hardware: Compaq LTE/386, 6MB RAM; 60MB hard drive; docking station, LAN card, VGA monitor (in the office)
Software: Extra, Word for Windows, Grandview, Professional Write Plus



Name: Kevin Puffer
Position: Quality control technician
Company: Nabisco Brands, Toledo
Hardware: Compaq LTE 386/20, 2MB RAM, 60MB hard drive
Software: WordPerfect, Symphony



Name: Sheldon Laube
Position: Chief information officer
Company: Price Waterhouse, New York
Hardware: Texas Instruments TravelMate 3000, 4MB RAM, 60MB hard drive; external modem
Software: Lotus Notes, Grandview, WordPerfect, Windows, Word for Windows, Hollywood, 1-2-3 for Windows, Stacker (file compression)

itor in the office. I do have a concern about the ability to expand storage in the portable unit, though. I know I'm going to need more than 60 megabytes, and I don't want to have to add external storage. That would just add to the weight of the system.

Kevin Puffer

Kevin travels to various Nabisco bakeries nationwide, servicing machines that measure the quality of the flour produced by his division, Nabisco Flour Mill. He uses his LTE on the road to take notes and write reports.

Portability was a major factor in my decision to buy the LTE. I carry a lot of tools with me when I travel, and I like to keep everything else to a minimum.

Performance is good. I'm used to a 25-MHz 386 desktop machine, and I didn't want something that would slow me down. Expandability is a problem, though. Compaq offers a lot of add-on and expansion products, but their products are much more expensive than their competitors'.

Although the screen quality is good, I've found you have to turn it on, wait about five minutes, and then readjust it. It seems to take a while for it to get to its proper resolution. The keyboard is definitely one of the weaker links of the system. I don't like the cursor control configuration—that goofy L-shape is tough to get used to—and I miss being able to page up and page down easily. But on the whole I'd rather have larger, but fewer, keys.

Still, I've gotten more than I expected. It's not like having your desktop computer with you, but the differences are fairly easy to adjust to.

TEXAS INSTRUMENTS TRAVELMATE 3000

Sheldon Laube

Sheldon spends roughly half his time on the road, visiting Price Waterhouse regional offices and clients. He doesn't believe in checking luggage, so "every

pound counts."

What I especially like about TI's notebooks is that they're really light. I loved my previous notebook (the 286-based TravelMate 2000) because it was only 4 pounds. This one weighs 5.7 pounds, and you feel the difference.

The battery life is acceptable—barely. It lasts about 2 hours, which isn't long enough if you're traveling from New York to L.A. It's on the flights lasting 6 hours that I want to get some work done, and every time I've used the 3000, the battery has run out. The keys don't have a lot of "travel" either, so it can be hard to tell if you've actually hit a key. I'm a very fast touch typist and I'm always missing spaces because of this.

There's no expandability to the 3000. It's not like the Compaq LTE, which you can plug into an expansion chassis and have a decent desktop system. So if you were buying only one machine, this wouldn't be a good choice.

Still, you can't beat what you get for such a low weight.

Jim Metzler

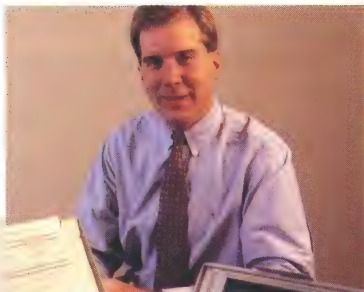
Jim is a partner in a CPA firm and his job takes him to client sites all over town, often to multiple locations in a single business day. He needs a light, unobtrusive computer.

I've used a lot of notebooks in the field, and the TI has fared very well in comparison. Its portability is good, and it does what I need on the road.

The TI's battery life is better than most, but all notebooks' are less than what they are touted to be. I took the 3000 on a business trip, got on the plane, computed for an hour, and then was out of business. You'd be crazy not to carry an extra battery.

Low glare on a screen is more important to me than high-resolution graphics or performance. Most notebooks are fine if you're working in the dark. The true test comes when you have glare, and the TI is pretty good in those circumstances. The keyboard has a good feel, and the function keys are easy to hit. You can't close your eyes and pre-

MIKE GROLL



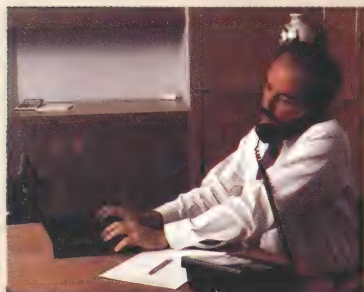
Name: Jim Metzler
Position: Partner
Company: Gaines, Emhof, Metzler & Kriener, Buffalo
Hardware: Texas Instruments Travel-Mate 3000, 2MB RAM, 30MB hard drive; 10-key numeric keypad
Software: 1-2-3, Professional Write, assorted auditing tools, custom time sheet program

SAM PARRISH



Name: Robert Mosley
Position: Programmer/analyst
Company: Bridgestone Tire, Nashville
Hardware: Toshiba T1200XE, 3MB RAM, 20MB hard drive
Software: 1-2-3, pcAnywhere, PFS: Write, PFS:File, Arbiter (communications)

NALLAH FEANNY



Name: Joe Schmader
Position: Marketing implementation manager
Company: Citicorp Mortgage, St. Louis
Hardware: Toshiba T1200XE, 1MB RAM, 20MB hard drive
Software: Mortgage Power Plus (in-house software), WordPerfect, 1-2-3

tend it's your desktop system, but for a notebook it's pretty good.

You don't need a ton of expansion for a notebook unless it's your main system. Accountants and CPA's need a numeric keypad, though, and only TI offers one that actually plugs in and becomes part of the machine.

TOSHIBA T1200XE

Robert Mosley

The T1200XE is Robert's only PC. He uses the notebook as his desktop system by day and takes it home with him in the evenings.

Overall, I've been impressed with the T1200XE. Its performance is good and the screen refreshes well. But don't be fooled by the manufacturers saying it's only a 7- or 8-pound computer. By the time you add everything up it's like carrying a Compaq luggage around with you. The cables and power supply alone add a pound or two.

The battery doesn't last as long as advertised, so I don't go anywhere without the power supply. I'd also prefer a VGA screen, but since I don't work with graphics it's not necessary.

I definitely wouldn't buy this machine as my sole PC. People talk about buying a laptop as their only machine,

but I wouldn't do that unless you do a lot of traveling and absolutely need to carry your PC around with you.

Joe Schmader

Joe's been using his T1200XE for about a year to demonstrate automated mortgage sales software to Citicorp branch offices around the country.

I'm already carrying a briefcase and other papers, so portability is essential. I also have a Compaq SLT/286, which is about 4 or 5 inches high—much bulkier. The Toshiba has a much flatter case, which makes it easier to carry around.

It's also very important to be able to see the screen from an angle so the people I'm demonstrating software to can see what's happening. Because of the presentations I do, VGA compatibility would have been nice. In fact, if I'm going to do a presentation for more than one person, I'll use my Compaq because I can plug the machine into a large color VGA monitor and the graphics look much nicer.

But the Toshiba is a better machine to use on a day-to-day basis if you are constantly on the move. It's lighter and more compact, which is important, since I also carry a printer with me. ☺

Alice LaPlante is a freelance writer in Palo Alto, California.



REPORT CARD

	Compaq LTE/386		Texas Instruments TravelMate 3000		Toshiba T1200XE	
	Alice Goldberg	Kevin Puffer	Sheldon Laube	Jim Metzler	Robert Mosley	Joe Schmader
Portability	A	A	A	A	B	B
Performance	A	A	A	B	B	B
Battery life	B-	C	C	C	C	C
Screen	C	B-	A	B	B	B
Keyboard	B	C	B	B	B	B
Expandability	C	C	D	A	B	B
Overall	A	A-	A	B	B	B

Temporaries Pretrained For Your Data Entry Formats.



Another First From Kelly.

If you have frequent, multiple or long-term requirements for data entry temporaries, our new Kelly® Customizer is ideal for meeting your needs.

By encrypting samples of your data entry screen and data entry forms on our proprietary Kelly Customizer training

software, we can now assign you Kelly temporaries pretrained to handle your specific data entry formats.

Your Kelly data entry temporaries arrive on the job ready to work, not just ready to learn.

Call your local Kelly office for details.

KELLY Temporary
Services

The Kelly Girl® People - The First and The Best®

©1991 Kelly Services, Inc.

Circle 142 on reader service card

Thumbs Up for Lightweight Laptops

Readers give high marks to the current crop of notebook PCs.

Roberta Furger



It's hard to imagine a class of hardware products that's changing more rapidly than notebook PCs. Nearly every day a new product is announced or a new company enters the already jam-packed field of notebook providers. The quality of these systems is improving at an equally fast clip.

A little over a year ago the only notebooks available were slow, poorly equipped units. But today, users can

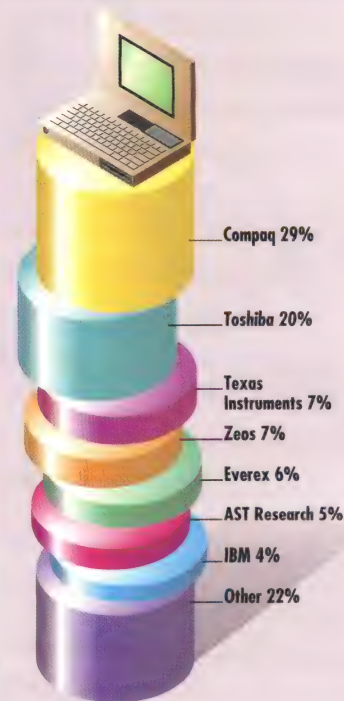
get lightweight, full-featured notebooks that rival many desktop systems in performance.

So what are users looking for in these hot little numbers? Portability tops the list, according to our survey of 100 *PC World* readers. Performance and screen quality are also key. And although 386SX-based systems are receiving the lion's share of publicity, 286-based notebooks are holding their own. Fifty-two percent of the readers surveyed bought a 286 notebook rather than one of the new 386SX units now on the market.

Compaq boasts the largest installed base among our notebook users, followed closely by Toshiba, which is holding its ground despite entering

COMPAQ, TOSHIBA DOMINATE THE NOTEBOOK MARKET

Together they make up nearly half the installed base at survey sites.

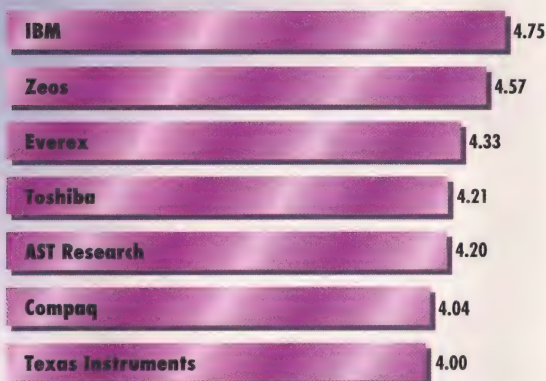


JEFF BERLIN

the market rather late. Relative newcomer IBM, whose first notebook (the L40SX) was introduced last spring, has the highest overall satisfaction rating among its purchasers—although

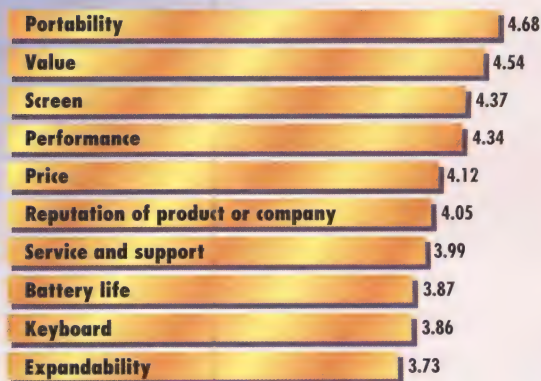
IBM USERS HAPPIEST WITH PRODUCT

Overall satisfaction with product
1=low 5=high



PORTABILITY TOPS LIST OF KEY FEATURES

Users rate important buying criteria
1=low 5=high



LIGHTWEIGHT NOTEBOOKS EARN HIGH SATISFACTION RATING

1=low 5=high

	Overall	AST Research	Compaq	Everex	IBM	Texas Instruments	Toshiba	Zeos
Portability	4.49	4.20	4.41	4.67	4.75	4.67	4.59	4.86
Performance	4.27	4.20	4.12	4.50	4.50	4.00	4.18	4.71
Screen	4.11	4.00	3.74	4.33	4.50	4.17	4.31	4.43
Value	4.09	4.40	3.74	4.50	4.25	4.14	4.18	4.43
Price	3.99	4.50	3.40	4.17	4.50	4.17	3.75	4.33
Service and support	3.86	4.00	3.61	4.20	4.50	3.00	4.08	4.75
Battery	3.83	3.40	3.96	4.17	4.00	3.29	3.80	4.33
Keyboard	3.81	3.20	3.35	4.17	3.75	3.25	4.25	4.29
Expandability	3.70	4.00	3.61	3.40	3.25	3.33	4.00	3.83

WOULD YOU BUY IT AGAIN?

Percentage of owners who would make the same purchase decision



Source: From a May 1991 survey of 100 PC World readers.

it's garnered only 4 percent of the installed base, according to this survey.

Most of the readers surveyed were happy with their choice, saying they'd buy the same unit again. Everex and

IBM appear to have found just what their notebook customers are looking for, with 100 percent of their users reporting they would purchase the same unit. AST buyers were the least loyal;

40 percent said they would buy a different system. ☹

Roberta Furger is an associate editor for PC World.

THE POWER THAT MOVES YOU...

ZENITH DATA SYSTEMS UPSETS THE BALANCE



MastersPort 386SL

The fully-featured notebook that sets the standard for the Intel386™ SL microprocessor. Its *Premier System Management*—with two separate resume modes—lets you hold work in active memory for weeks at a time.



INTRODUCING 5 NEW PORTABLES FROM ZENITH DATA SYSTEMS.

The conventional way to look at portable power is from the PC's perspective. The processor. The speed. The memory. At Zenith Data Systems, we believe the proper perspective is yours. How easily you can take full advantage of the power within your PC. A philosophy exemplified by our five new portables. Our breakthrough MastersPort battery-powered 486™ laptops — the first ever. Both so advanced, they just might replace your desktop. Plus 286 and 386SX notebooks that are titans on performance. So if you want power without limits, these are the portables to move to. Unquestionably from Zenith Data Systems. For more information and the name of your nearest Zenith Data Systems Medallion Reseller, call **1-800-523-9393** in North America.

OF POWER.



MastersPort 286 MastersPort 386SX SupersPort 486SX SupersPort 486

ZENITH
data systems



Groupe Bull

LOOK INTO THE POWER OF 5 NEW PORTABLES

	MastersPort™ 286	MastersPort 386SX	MastersPort 386SL	SupersPort® 486SX	SupersPort 486
Processor—Speed	286 – 12/6MHz	386SX – 20/10MHz	386SL – 20/5/0MHz	486SX – 20/10MHz	486 – 25/12.5MHz
Co-Processor	80C287 socket	80387SX socket	80387SX socket	Upgradeable to 486-20MHz	Integrated
Memory (Std./Max.)	1MB/2MB	2MB/4MB	2MB/8MB (64K cache)	4MB/16MB	4MB/16MB
Hard Disk Drive	30MB	60MB	60MB	120MB	120MB
LCD/Size	Backlit/8.85"	Backlit/8.85"	Backlit/8.85"	Edgelit/10.7"	Edgelit/10.7"
Video/Gray Scales	VGA/16	VGA/16	VGA/32	VGA/64	VGA/64
Power Management	<ul style="list-style-type: none"> • Suspend/Resume • Sleep mode • Low battery operation 	<ul style="list-style-type: none"> • Suspend/Resume • Sleep mode • Low battery operation 	Premier System Management™ <ul style="list-style-type: none"> • Standby/Resume • Rest/Resume • Panic Save • Unattended communications 	Intelligent Power Management™	Intelligent Power Management
Software	MS-DOS® included	MS-DOS included	MS-DOS pre-installed; Microsoft® Windows™ v. 3.0 included	MS-DOS and Microsoft Windows v. 3.0 pre-installed	MS-DOS and Microsoft Windows v. 3.0 pre-installed
Weight (with battery)	6.6 lbs.	6.6 lbs.	6.8 lbs.	15 lbs.	15 lbs.

Intel 386 and 486 are trademarks of Intel Corporation. MastersPort, SupersPort, Premier System Management and Intelligent Power Management are trademarks of Zenith Data Systems Corporation. MS-DOS, Microsoft and Windows are trademarks of Microsoft Corporation.

Copyright © 1991 Zenith Data Systems Corporation

Circle 290 on reader service card

Share Peripherals Without Networking

Rex Farrance

If all you need to do is enable your work group to share peripherals, a LAN may not be necessary. Peripheral-sharing hardware—boxes with multiple serial and parallel ports that give several PCs access to an array of peripherals—may be the most cost-effective solution. The switching options run from inexpensive mechanicals to more sophisticated and convenient electronics. High-end switchers add communications features and let you share modems.

If every PC is within 15 feet of the printer, you can use a fast parallel connection. But to get across the office (as far as 200 feet), you have to use a serial link. Install the right software drivers, and even Macs and other small computers can share peripherals with your PCs.

Printer-Sharing Solutions

Laser Printer Add-Ins

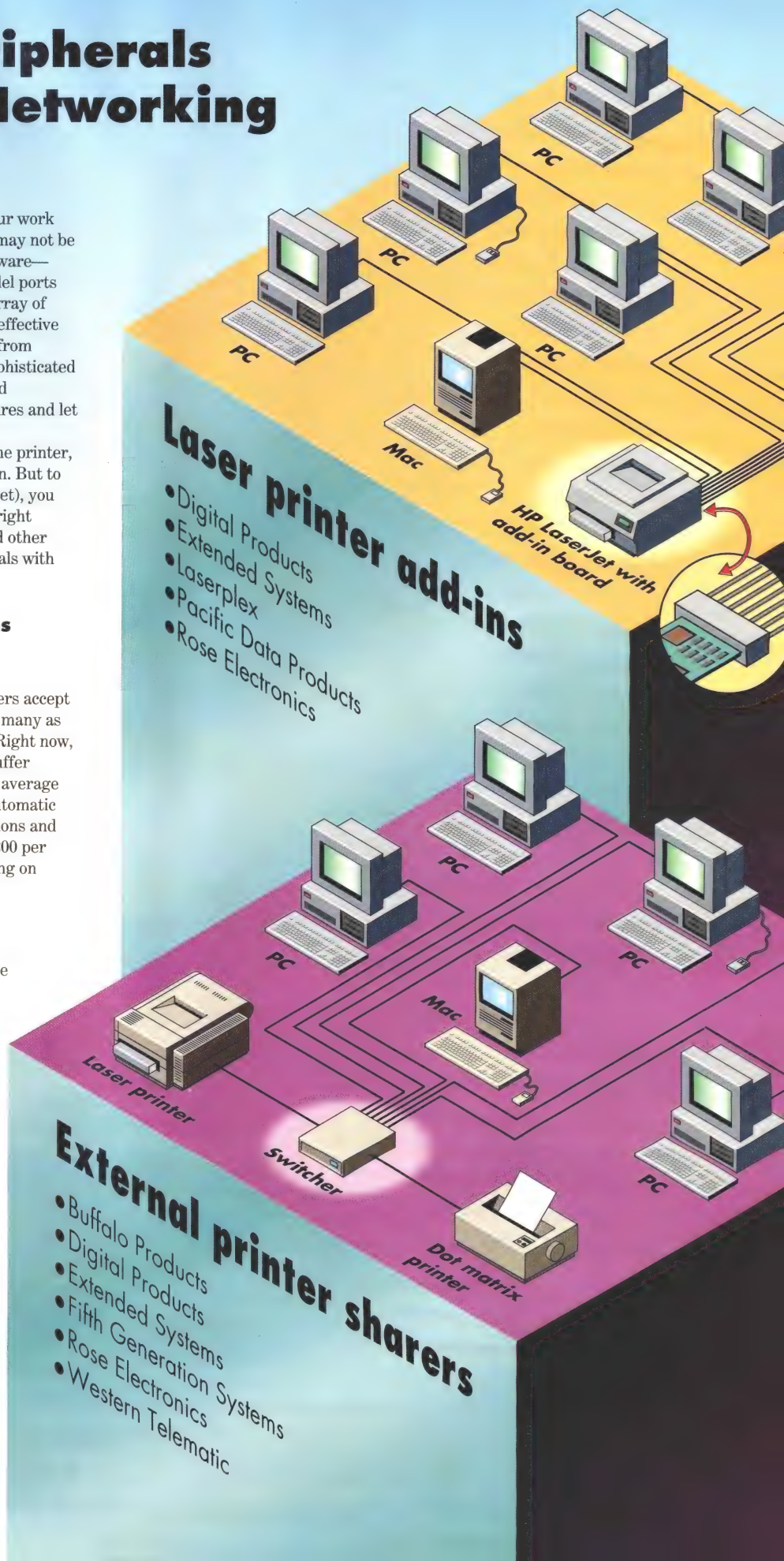
HP LaserJets and some other printers accept printer-sharing boards, which let as many as eight computers share one printer. Right now, some boards can handle 1.2MB of buffer memory, enough to queue dozens of average text files. And some units provide automatic switching between LaserJet emulations and PostScript. Costs run from \$50 to \$200 per connection without cabling, depending on vendor and configuration.

External Printer Sharers

If your group needs to share multiple printers, one of an assortment of external switchers may fill the bill. Users who print large graphics files will want to add a lot of memory—one switcher's buffer holds 16MB. And you can choose from many devices offering a host of computer-to-printer configurations. Most units let you daisy-chain to add users. Again, prices vary from \$50 to \$200 per connection.

Peripheral-Sharing Devices

These products add the ability to share a modem or to communicate directly from computer to computer. And like external printer sharers, most can be daisy-chained. Costs range from about \$50 per connection to more than \$300.



WHERE TO BUY

Buffalo Products Inc.

2805 19th St. SE
Salem, OR 97302
800/345-2356,
503/585-4505 (fax)
Reader service no. 687

Digital Products Inc.

108 Water St.
Watertown, MA 02172
800/243-2333,
617/924-7814 (fax)
Reader service no. 688

Extended Systems

6123 N. Meeker Ave.
Boise, ID 83704
800/235-7576,
406/587-9170 (fax)
Reader service no. 689

Fifth Generation Systems, Inc.

10049 N. Reiger Rd.
Baton Rouge, LA 70809
800/873-4384,
504/295-3268 (fax)
Reader service no. 690

Laserplex Corp.

304 S. Abbott Ave.
Milpitas, CA 95035
408/946-2298,
408/946-0232 (fax)
Reader service no. 691

Pacific Data Products

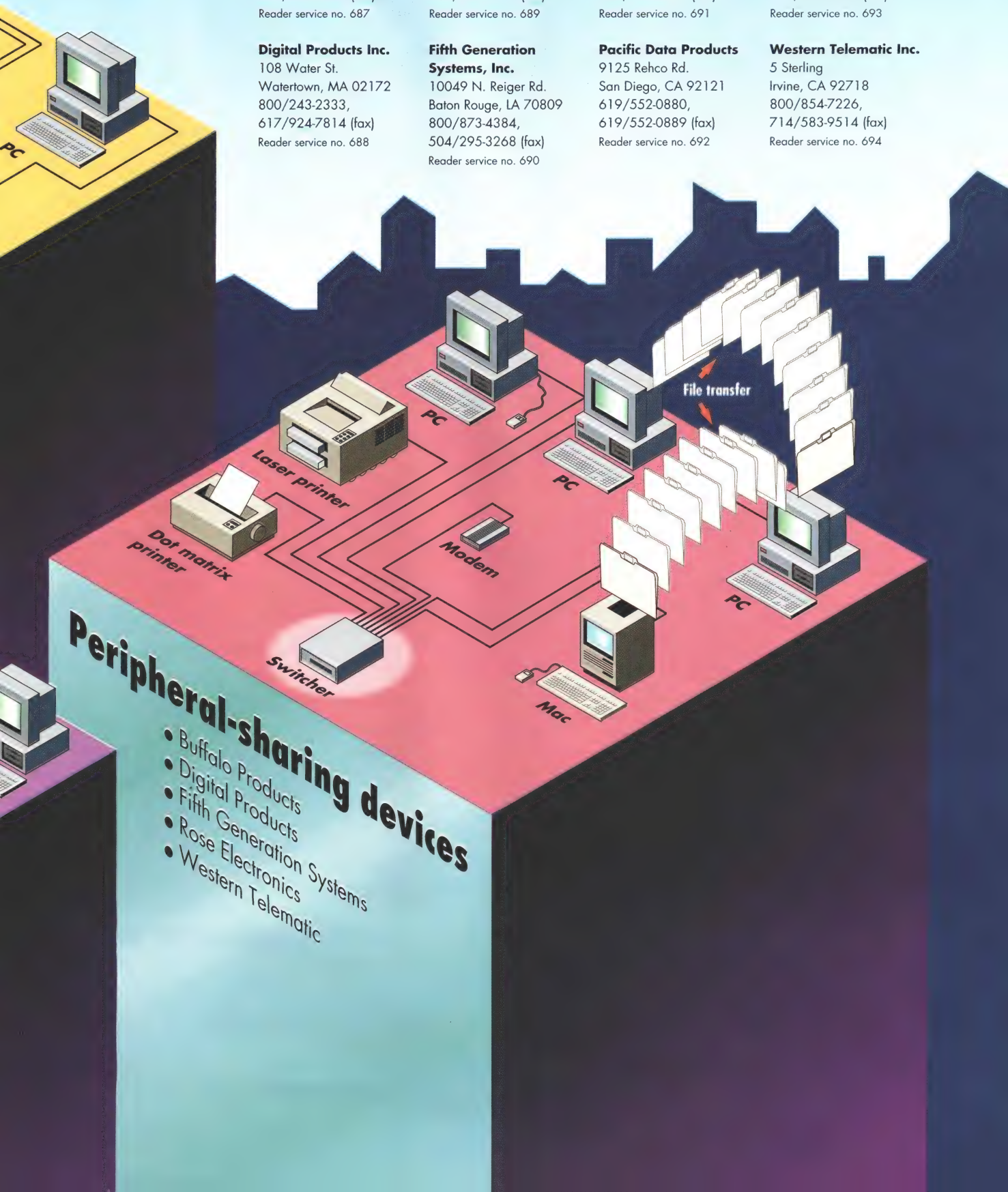
9125 Rehco Rd.
San Diego, CA 92121
619/552-0880,
619/552-0889 (fax)
Reader service no. 692

Rose Electronics

10850 Wilcrest Dr. #900
Houston, TX 77099
800/333-9343,
713/933-0044 (fax)
Reader service no. 693

Western Telematic Inc.

5 Sterling
Irvine, CA 92718
800/854-7226,
714/583-9514 (fax)
Reader service no. 694



Peripheral-sharing devices

- Buffalo Products
- Digital Products
- Fifth Generation Systems
- Rose Electronics
- Western Telematic

2400-BAUD MODEMS

NO LONGER A LUXURY ITEM, 2400-BAUD MODEMS ARE NOW THE MOST COST-EFFECTIVE CHOICE FOR TELECOMMUNICATIONS. HERE'S HOW TO FIND ONE THAT'S FAST AND ERROR FREE.



BRETT GLASS

Would your business benefit from instant access to stock quotes? Computerized airline reservations? Up-to-the-minute news reports? Would you like to share spreadsheet files with workers on the opposite coast? All this and more becomes possible with a *modem*—a device that enables your computer to talk to other computers over telephone lines.

A modem's bytes-per-second speed is roughly one-tenth its *baud rate*, and the most popular and cost-effective

modems today are those with a baud rate of 2400—in other words, those that can send and receive about 240 characters per second (cps). You can still buy a 1200-baud modem, but with some 2400-baud models selling for under \$100 on the street, why accept less?

If you're planning to send vast amounts of data regularly to distant area codes, you might want to consider a 9600-baud modem. But that sort of speed costs money—anywhere from \$600 to \$1200—while a first-

class 2400-baud modem, with error correction, and data compression that effectively increases data transmission, lists for about \$300 to \$400.

THE INTERNAL QUESTION

There are two kinds of modems; those that go inside your computer (internal), and those that connect on the outside (external); so you'll have to choose between losing a slot in your PC and giving up some desk space. Most external mo-

dem fit under a telephone, however, so you may not lose any space at all.

External modems have other advantages. Most have status lights that tell you what's going on during a communications session—whether you're sending or receiving data, if you're still connected, and so on. And unlike internal modems, externals work with any personal computer, including Micro Channel-based PS/2s, laptops, and Macintoshes, and they can be moved

2400-BAUD EXTERNAL MODEMS



Manufacturer	Product	Price	Warranty (years)	SWITCHES			STATUS LIGHTS	
				Power	Voice/data	Answer/originate	Power	Off hook
ATI TECHNOLOGIES	2400ETC.E	\$239	2	Y	Y	Y	Y	Y
BEST DATA PRODUCTS	Smart One 2400X	\$169	2	Y	N	N	Y	Y
	Smart One 2400XMNP	\$249	2	Y	N	N	Y	Y
CARDINAL TECHNOLOGIES	MB2400EX	\$179	1	Y	N	N	Y	Y
	2400MNP	\$229	1	Y	N	N	Y	Y
	2400V42	\$289	1	Y	N	N	Y	Y
COMPUTER FRIENDS	Lightspeed 2400LE	\$159	2	Y	N	N	N	Y
DATATREK	2424ADH Plus	\$395	2	Y	N	N	Y	Y
	2424AMH Plus	\$495	2	Y	N	N	Y	Y
	624 Modem	\$549	2	Y	Y	Y	Y	Y
EVEREX	Evercom 24E	\$269	2	Y	N	N	N	Y
	Evercom 24E+	\$299	2	Y	N	N	N	Y
FASTCOMM COMMUNICATIONS	FDX 2448	\$649	2	Y	N	N	Y	Y
GALAXY NETWORKS	Pioneer V.22bis/V.42bis	\$299	2	Y	N	N	Y	Y
GVC TECHNOLOGIES	SM-24V	\$269	5	Y	N	N	N	Y
HAYES MICROCOMPUTER PRODUCTS	Smartmodem 2400	\$499	2	Y	Y	N	N	Y
	V-series Smartmodem 2400	\$649	2	Y	N	N	N	Y
LOGICODE TECHNOLOGY	Quicktel 2400EX	\$160	5	Y	N	N	Y	Y
MICROCOM	QX/2400t	\$699	1	N	Y	Y	Y	Y
MULTI-TECH SYSTEMS	MultiModem 224E	\$499	2	Y	Y	Y	N	Y
	MultiModem 224E7	\$549	2	Y	Y	Y	N	Y
NEC TECHNOLOGIES	N2431E	\$575	1	Y	Y	N	N	Y
OMNITEL	2400SD	\$249	2	Y	N	N	N	Y
	2400s+	\$299	2	Y	N	N	N	Y
PRACTICAL PERIPHERALS	PPM 2400 Pocket Modem	\$159	5	N	N	N	Y	N
	PM2400SA	\$239	5	Y	N	N	Y	Y
	PM2400SA V.42bis	\$299	5	Y	N	N	Y	Y
PROMETHEUS PRODUCTS	ProModem 2400G	\$249	2 ³	Y	N	N	Y	Y
	ProModem 2400 Plus	\$299	2 ³	Y	N	N	Y	Y
	ProModem 2400 Mini	\$189	2 ³	Y	N	N	Y	Y
RACAL-VADIC	2400VP	\$595	1	N ⁴	Y	Y	Y	N
	VI2422PA	\$695	1	N ⁴	Y	Y	N ⁵	N ⁵
	2400PA Model 2	\$695	1	N ⁴	Y	Y	N ⁵	N ⁵
SUPRA	SupraModem 2400	\$150	5	Y	N	N	N	Y
	SupraModem 2400 MNP	\$200	5	Y	N	N	N	Y
	SupraModem 2400 Plus	\$240	5	Y	N	N	N	Y
TELENETICS	T-NET 24X	\$169	5	Y	N	N	N	Y
	TC921S-24	\$495	5	Y	Y	Y	N	Y
U.S. ROBOTICS	Sportster 2400	\$239	2	Y	N	N	N	N
	Sportster 2400 MNP	\$299	2	Y	N	N	N	N
	Courier 2400e	\$599	2	Y	N	N	N	Y
VEN-TEL	2400 Plus II	\$499	5	Y	Y	N	Y	Y
ZOOM TELEPHONICS	Zoom/Modem MX2400R	\$129	7	Y	N	N	Y	Y
	Zoom/Modem V.42bis	\$300	2	Y	N	N	Y	Y

¹ Proprietary version.

² Extra-cost option.

³ Two-year standard warranty; 30-day money-back guarantee.

⁴ Twelve dual-function keys permit controlling all functions from panel.

⁵ Eight-character LCD panel.

For more information about all products in this table, circle reader service no. 907.

ERROR CORRECTION/DATA COMPRESSION

Data terminal ready	Carrier detect	Send/receive data	Auto-answer	Modem ready	MNP-4	MNP-5	V.42	V.42bis	Bundled communications software	Volume controlled by hardware	Power-on self-test	Callback security	Reader service number
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	716
Y	Y	Y	Y	Y	N	N	N	N	Bitcom	Y	N	N	717
Y	Y	Y	Y	Y	Y	Y	N	N	Bitcom	Y	N	N	717
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	718
Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N	718
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	718
Y	Y	Y	Y	Y	Y	Y	N	N	QuickLink II	Y	Y	N	719
Y	Y	Y	N	Y	N	N	N	N	N	Y	Y	N	720
Y	Y	Y	N	Y	Y	N	N	N	N	Y	Y	N	720
Y	Y	Y	N	Y	Y	Y	N	N	N	Y	Y	Y	720
Y	Y	Y	N	Y	N	N	N	N	Procomm ¹	N	Y	N	721
Y	Y	Y	Y	Y	N	N	Y	Y	Procomm ¹	N	Y	N	721
Y	Y	Y	Y	Y	Y	Y	N ²	N ²	N	Y	Y	N	722
Y	Y	Y	Y	Y	Y	Y	Y	Y	Telix	N	Y	N	723
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	724
Y	Y	Y	Y	Y	N	N	N	N	Smartcom II ²	Y	Y	N	725
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	725
Y	Y	Y	Y	Y	N	N	N	N	QuickLink II	N	Y	N	726
Y	N	Y	N	N	Y	N	Y	Y	N	Y	Y	N	727
Y	Y	Y	N	N	Y	Y	Y	N	N	Y	Y	Y	728
Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	Y	728
Y	Y	Y	N	N	Y	Y	N	N	N	N	Y	N	729
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	730
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	730
N	N	N	N	N	N	N	N	N	N	N	Y	N	731
N	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	731
N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	731
Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y	N	732
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	732
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	732
N	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N	733
N ⁵	N ⁵	N ⁵	N ⁵	N ⁵	Y	Y	Y	Y	N	N	Y	Y	733
N ⁵	N ⁵	N ⁵	N ⁵	N ⁵	Y	Y	N	N	N	Y	Y	N	733
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	734
Y	Y	Y	Y	Y	Y	Y	N ²	N ²	N	N	Y	N	734
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	734
Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	735
Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	N ²	735
N	Y	N	N	Y	N	N	N	N	N ²	N	N	N	736
N	Y	N	N	Y	Y	Y	N	N	N ²	N	N	N	736
Y	Y	Y	Y	Y	Y	Y	N	N	N ²	Y	N	N	736
Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	737
Y	Y	Y	Y	Y	N	N	N	N	N	N	Y	N	738
Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	738

2400-BAUD INTERNAL MODEMS



Manufacturer	Product	Price	PS/2 price	Warranty (years)	ERROR CORRECTION/ DATA COMPRESSION				Bundled communications software	Volume controlled by hardware
					MNP-4	MNP-5	V.42	V.42bis		
ATI TECHNOLOGIES	2400ETC.I	\$199	\$199	2	Y	Y	Y	Y	Mirror II	N
BEST DATA PRODUCTS	Smart One 2400B	\$99	\$99	2	N	N	N	N	Bitcom	Y
CARDINAL TECHNOLOGIES	MB2450	\$189	\$239	1	N	N	N	N	Bitcom or Flashlink	N
	2450MNP	\$199	\$299	1	Y	Y	N	N	Bitcom or Flashlink	N
	2450v42	\$189	\$299	1	Y	Y	Y	Y	Bitcom or Flashlink	N
DATATREK	Half-Pak #24	\$345		2	N	N	N	N	N	N
	Full-Pak #24M	\$445		2	Y	N	N	N	N	Y
EVEREX SYSTEMS	Evercom 24	\$129	\$299	2	N	N	N	N	Procomm ¹	N
	Evercom 24+	\$249	\$349	2	N	N	Y	Y	Procomm ¹	N
GALAXY NETWORKS	Pioneer V.22bis/V.42bis	\$259		2	Y	Y	Y	Y	Teliv	N
GVC TECHNOLOGIES	SM-24HV	\$199		5	Y	Y	Y	Y	Communications by Crosstalk	Y
HAYES MICROCOMPUTER PRODUCTS	V-series Smartmodem 2400B V.42	\$599		2	Y	Y	Y	Y	N ²	N
	V-series Smartmodem 2400B X.25	\$599		2	Y	Y	Y	Y	N ²	N
LOGICODE TECHNOLOGY	Quicktel 2400 H	\$112		5	N	N	N	N	QuickLink II	N
	Quicktel V.22bis/V.42bis	\$210		5	Y	Y	Y	Y	QuickLink II	N
MICROGATE	MV22i	\$139		1	Y	Y	Y	Y	N	N
MULTI-TECH SYSTEMS	MultiModem224EC7B	\$449	\$499	2	Y	Y	Y	Y	Procomm	Y
OMNITEL	2400HB	\$199	\$249	2	N	N	N	N	Procomm	N
	2400i+	\$249	\$299	2	Y	Y	Y	Y	Procomm	N
PRACTICAL PERIPHERALS	PM2400	\$189	\$299	5	N	N	N	N	Procomm	N
	PM2400 V.42bis	\$249		5	Y	Y	Y	Y	QuickLink II	N
PROMETHEUS PRODUCTS	ProModem 2400B	\$169		2 ³	N	N	N	N	Mirror II	Y
	ProModem 2400B Plus	\$249		2 ³	Y	Y	Y	Y	Mirror II	Y
RACAL-VADIC	LC2400PC	\$395	\$395	1	Y	N	N	N	N	N
SUPRA	SupraModem 2400i	\$100		5	N	N	N	N	Mirror II	N
	SupraModem 2400i MNP	\$150		5	Y	Y	N ²	N ²	Mirror II	N
	SupraModem 2400i Plus	\$200		5	Y	Y	Y	Y	Mirror II	N
TELENETICS	T-NET 24I	\$139		5	N	N	N	N	N	N
U.S. ROBOTICS	Sportster 2400	\$199		2	N	N	N	N	Communications by Crosstalk	N
	Sportster 2400 MNP	\$249		2	Y	Y	N	N	Communications by Crosstalk	N
	Courier 2400e	\$549	\$499	2	Y	Y	N	N	N ²	N
VEN-TEL	PCM 2400E	\$399	\$399	5	Y	Y	N	N	N	Y
ZOOM TELEPHONICS	Zoom/Modem HC2400R	\$129		7	N	N	N	N	Procomm	N

¹ Proprietary version.

² Extra-cost option.

³ Two-year standard warranty; 30-day money-back guarantee.

For more information about all products in this table, circle reader service no. 906.

and it pays to get a modem with both. Error correction works only if the modem on the other end has the same scheme as yours, and these standards are not universally supported, so having both increases your chances of correcting errors.

If your modem offers data

compression, you can cut the time it takes to send and receive data, saving money on phone bills and fees for on-line services. But as with error correction, both modems must support the same standard. The two most common compression schemes are MNP 5,

which effectively doubles transmission speed, and V.42bis, which almost triples it. All MNP 5 modems support MNP 4, and all V.42bis modems support V.42. Virtually all V.42bis modems support MNP 4 and MNP 5 as well. But ask your vendor if a mo-

dem implements MNP 5 in hardware. Some vendors include a software version of MNP 5 which isn't as fast as a hardware version.

MODEM CONTROL

Modems can't work on their own; they need communica-

Power-on self-test	Callback security	Reader service number
Y	N	697
N	N	698
Y	N	699
Y	N	699
Y	N	699
Y	N	700
Y	N	700
Y	N	701
Y	N	701
Y	N	723
Y	N	703
Y	N	704
Y	N	704
Y	N	705
Y	N	705
Y	N	706
Y	Y	707
Y	N	708
Y	N	708
Y	N	709
Y	N	709
Y	N	710
Y	N	710
N	N	711
Y	N	712
Y	N	712
Y	N	712
N	N	713
N	N	736
N	N	736
N	N	736
N	N	715
Y	N	739

tions software, and some modem makers bundle such programs free. But while software can help you get started, don't be too quick to reject a modem simply because it doesn't come with any. Bundled programs often lack such features as a dialing directory

or support for the YMODEM and ZMODEM error-correcting protocols. Unless your requirements are very simple, you may need a more powerful communications package (see "Easier Tools for the On-Line World," April 1991, for more information on communications programs). And if your needs are simple, you may be able to get by with the communications module of a program you already own, such as *PC Tools Deluxe*, *Microsoft Works*, or *Sidekick 2.0*.

If you plan to access your home or office system from

someplace else, say, with a remote control program like *pcAnywhere*, you may want a modem with *callback security*. Instead of just letting anyone who calls in connect to the computer, a modem with callback security *calls back* a predetermined number, allowing connections from that location only.

One alternative to a standard modem you may want to consider is a fax-modem. Many fax boards now offer a built-in 2400-baud modem as an option, giving you two ways to communicate electronically

in one board, and their prices continue to drop. (See "Buyers' Guide: Fax Boards and Fax Gateways," March 1991, for an in-depth discussion and list of products.)

Odds are your modem will come with introductory offers from bulletin boards, news wires, and other services. Log on and enjoy. You may wonder how you ever managed without a modem. ☺

Brett Glass is a contributing editor for PC World. Cathy Smith and Art Wilcox provided research.

WHERE TO BUY

ATI Technologies, Inc.

3761 Victoria Park Ave.
Scarborough, Ontario
M1W 3S2 Canada
416/756-0718,
416/756-0720 (fax)

Best Data Products

9304 Deering Ave.
Chatsworth, CA 91311
818/773-9600,
818/773-9619 (fax)

Cardinal Technologies Inc.

1827 Freedom Rd.
Lancaster, PA 17601
717/293-3055 (fax)

Computer Friends

14250 N.W. Science Park Dr.
Portland, OR 97289
800/547-3303,
503/643-5379 (fax)

DataTrek

4505 Wyland Dr.
#400
Elkhart, IN 46516
219/522-8000,
219/522-0822 (fax)

Everex Systems, Inc.

Cygnit Technologies
2560 Ninth St. #220
Berkeley, CA 94710
415/486-2600

FastComm Communications Corp.

45472 Holiday Dr.
Sterling, VA 22170
800/521-2496

Galaxy Networks, Inc.

8921 De Soto Ave.
#205
Canoga Park, CA 91304
818/998-7851,
818/998-1758 (fax)

GVC Technologies, Inc.

99 Demarest Rd.
Sparta, NJ 07871
201/579-3630,
201/579-2702 (fax)

Hayes Microcomputer Products, Inc.

P.O. Box 105203
Atlanta, GA 30348
404/441-1617,
404/441-1213 (fax)

Logicode Technology, Inc.

1817 De Havilland Dr.
Newbury Park, CA 91320
805/499-4443,
805/499-8588 (fax)

Microcom, Inc.

500 River Ridge Dr.
Norwood, MA 02062
800/822-8224

Microgate

P.O. Box 27350
Austin, TX 78755
800/444-1982,
512/343-9046 (fax)

Multi-Tech Systems, Inc.

2205 Woodale Dr.
Mounds View, MN 55112
800/328-9717

NEC Technologies

110 Rio Robles
San Jose, CA 95134
800/222-4632,
408/433-1239 (fax)

OmniTel, Inc.

3500 W. Warren Ave.
Fremont, CA 94538
800/666-4835,
415/657-4079 (fax)

Practical Peripherals

31245 La Baya Dr.
Westlake Village, CA 91362
800/442-4774,
818/706-2474 (fax)

Prometheus Products, Inc.

7225 S.W. Bonita Rd.
Tigard, OR 97223
800/477-3473,
503/624-0843 (fax)

Racal-Vadic

1708 McCarthy Blvd.
Milpitas, CA 95035
800/482-3427,
408/434-0188 (fax)

Supra Corp.

7101 Supra Dr. SW
Albany, OR 97321
503/967-9075,
503/926-9370 (fax)

Telenetics Corp.

2491 E. Orangethorpe Ave.
Fullerton, CA 92631
714/738-8092,
714/738-4565 (fax)

U.S. Robotics, Inc.

8100 N. McCormick Blvd.
Skokie, IL 60076
800/342-5877,
708/982-5235 (fax)

Ven-Tel

2121 Zanker Rd.
San Jose, CA 95131
800/538-5121,
408/436-7451 (fax)

Zoom Telephonics

207 South St.
Boston, MA 02111
800/666-6191,
617/423-9231 (fax)

THE MOST US TO COME ALONG



A few months ago we brought you the world's most useful computer—the Toshiba T2000SX.

That computer symbolized what we call “the next generation in personal computing.” A com-

puter that not only allows you the freedom to work where, when, and how you want to. But is so precisely engineered—from its superior keyboard to its easy-to-read VGA screen—

that you'll actually enjoy using it.

Well, thanks to the incredible speed of modern technology, here we are once again.

This time to present the new Toshiba T2000SXe.

THE E STANDS FOR EXTRA POWER.

Of course, the T2000SXe also offers Hypertext, a VGA screen, full modem capabilities (including available cellular and fax accessories), full-size sculpted keys on its keyboard and a host of additional benefits that make other notebooks look more like memo pads.

The most useful computer isn't of much use if its battery doesn't last long.

**INTRODUCING THE MOST USEFUL COMPUTER
TO COME ALONG IN THE LAST 15 MILLION YEARS.**

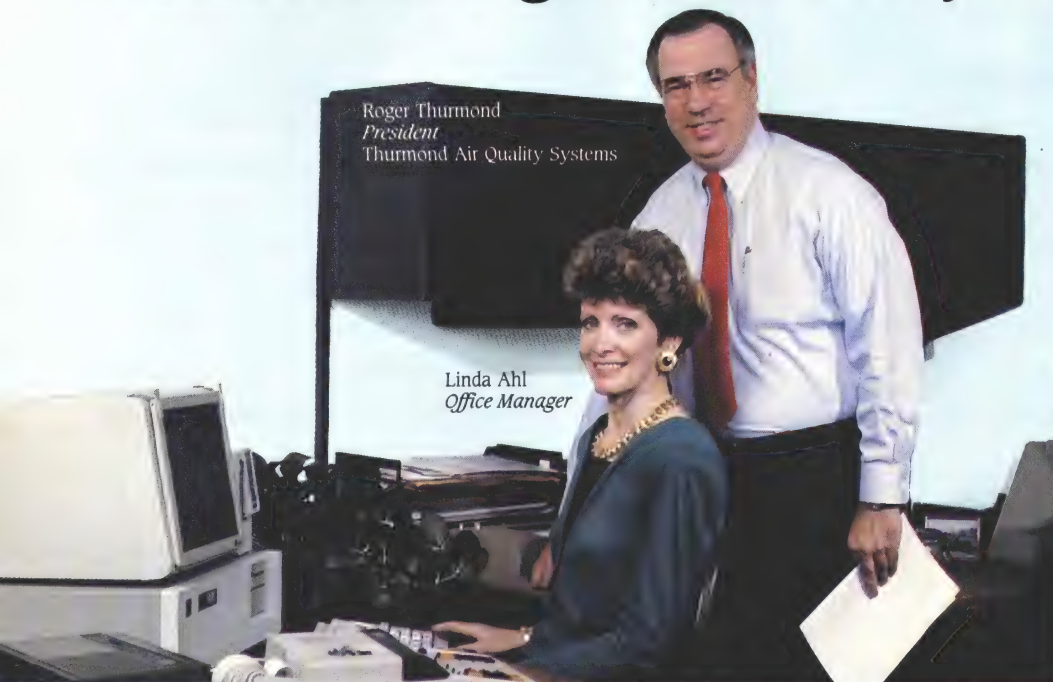
more about the T2000SX and Toshiba's best-selling line of portable computers by calling 1-800-457-7777 for a complete information kit.

You already possess the highest form of intelligence. Isn't it about time you got the highest form of computer?

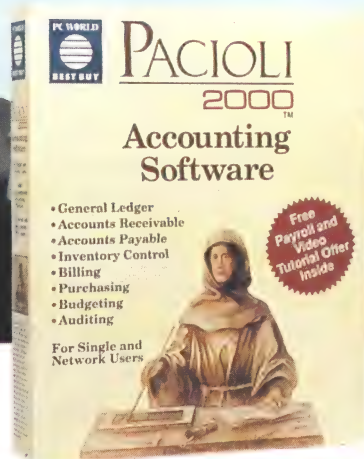
In Touch with Tomorrow
TOSHIBA

Circle 285 on reader service card

"Pacioli 2000 gives us everything we need"



\$49⁹⁵



Like more than 100,000 other satisfied customers, Linda and her boss Roger have discovered the many benefits of using our award winning Pacioli 2000 Accounting Software. "It really is easy to use and the customer service is tremendous," says Linda. Roger likes Pacioli 2000 because "... it offers everything we need and the cost was hard to believe." In fact, the *New York Times* states that Pacioli 2000 is "... the equal of other high end accounting programs in every way but cost."



Pacioli 2000 has been featured on *CNN's Headline News* and *Money Line*. It has also been honored by *PC World* as the "Best Buy" in 1990 and has received *Compute's* CHOICE AWARD for the "Best Financial Software of 1991." This system was designed by J. M. Hurtado, who started the accounting software revolution with DacEasy™ Accounting in 1985. Pacioli 2000 makes managing your business finances easier than you ever thought possible by fully integrating eight modules into one powerful system: General Ledger, Accounts Receivable, Accounts Payable, Inventory Control, Billing, Purchasing, Budgeting and Auditing.

It includes pull-down menus, full mouse support, context-sensitive help, automatic installation, and a file inquiry system that will let you make inquiries or create accounts "on-the-fly" ... features not usually found in the most expensive accounting packages.

PC Week called Pacioli 2000 "... the best software value of the year" and they are right. Pacioli 2000 is also fully net-

workable, which means one or any number of users can enjoy the same easy-to-use, powerful features with no additional fees. It is ready to perform as multi-user accounting software with file and record locking, multi-level password protection and more.

In addition to being easy to use, Pacioli 2000 is backed by a 90 day money-back guarantee when purchased directly from M-USA. If you are not completely satisfied, simply return the entire package and we will refund your purchase price (less shipping charges). You will also receive FREE technical support for 30 days. If you have any questions while using Pacioli 2000, the answers are as close as your telephone.

And now, there are two great offers included. When you send in your registration card, you can order our new Pacioli 2000 Payroll FREE. You can also order a FREE 2 hour instructional video to help you learn MS-DOS, Basic Accounting and Pacioli 2000. With each offer you pay only for shipping and handling.

The *Computer Buyer's Guide and Handbook* said in the January 1991 issue, "... Pacioli is one of the all-time great bargains in software." Because it gives them everything they need, Linda and Roger agree. Try it and you'll soon discover that Pacioli 2000 will meet your needs too.

Minimum Hardware Requirements: IBM or compatible computer with 500Kb of free memory available, hard disk, monochrome or color monitor, mouse optional, MS-DOS 2.1 or later for single users (3.1 or later for networks), 132 column dot matrix printer in compressed mode.

© Copyright 1991, M-USA Business Systems, Inc. Pacioli 2000 is a trademark of M-USA Business Systems, Inc. All others are trademarks or registered trademarks of their respective manufacturers.

All specifications and special offers subject to change without notice.

8 Modules Fully Integrated into One System

Easy to Install, Learn and Use

Network-Ready with No Additional Fees

30 Day Free Technical Support

90 Day Money-Back Guarantee

Offer for Free Pacioli 2000 Payroll

Offer for Free Instructional Video

M-USA
BUSINESS SYSTEMS, INC.

15806 Midway Road
Dallas, Texas 75244-2195

\$49⁹⁵ suggested retail USA, plus \$7.50 shipping and handling plus 8.25% sales tax for Texas residents.

For more information call
1-214-490-0100

To order in USA call
1-800-345-4243, Operator 250

NEW!

Special Canadian Version of Pacioli 2000 Accounting Software, supporting GST and PST is now available.

\$99⁹⁵ Canadian dollars suggested retail (plus freight)

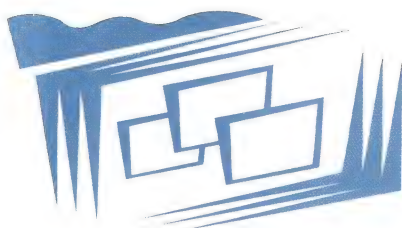
To order Canadian Version, call
1-800-668-0454, Operator 2500.
Free offers not available in Canada

Circle 7 on reader service card

Nine Tips for Better Windows Networking

Windows may be user-friendly, but it's fussy about networks. These tips from a LAN pro can save you hassles and headaches.

Robert Lauriston



Windows

If you believe Bill Gates, *Windows* will be running everything except stop-lights and toaster ovens by 1993. But getting it to run quickly and smoothly with a local area network can be a pain. If you're a *Windows* user hooked up to a LAN, check out these tips we've culled from Microsoft's recently released *Windows Resource Kit* and our own hard-fought experience.

► Pick your own directory

A DOS program's PIF file can specify its start-up directory, which makes find-

ing data files easier. *Windows* programs don't have PIF files, so you must trick *Windows*.

Select the icon of the desired *Windows* program and then *File Properties*. At the Command Line field, enter the path to the data directory *before* the program file name, such as `F:\USERS\JSMITH\XL-DOCS\EXCEL.EXE`; then select *OK*. *Windows* won't find *Excel* in that directory and will yelp 'Invalid Path'. Click *OK* to override the warning. The next time you run *Excel*, the File Open dialog box will default to the \XL-DOCS subdirectory. Note: The directory containing the program file must be referenced in your PATH statement.

► Free up memory for multitasking DOS applications

Most network operating systems let you load their drivers and shells into extended or expanded memory, freeing up conventional memory for DOS applications. How much RAM you'll recover

varies. NetWare will return at least 32K if you replace NET3.COM with XMSNET3.EXE or EMSNET3.EXE. If your network doesn't offer this option, your LAN vendor may know of a third-party utility that can do the job.

► Run diskless workstations in 386-enhanced mode

Most diskless 386 workstations can run *Windows* only in standard or real mode, and that means you can't multitask DOS programs. But if you've got 2MB of RAM with 1MB as extended, you can slip into 386-enhanced mode by loading Microsoft's RIPLMEM utility, then starting *Windows* with the **WIN/3** command. RIPLMEM is available free from Microsoft at 800/426-9400.

► Navigate in and out of server subdirectories

Since NetWare's subdirectory lists don't include the ".." entry for the parent



Adding a few simple lines to **NETWARE.INI**, as described in tip 6, puts these useful NetWare utilities into the Control Panel's Network menu.

directory, there's no way to back out of a directory once you've gotten into it with the File Manager or a file dialog box. The solution? Create a "shell configuration" file. Load Notepad and type the single line **SHOW DOTS=ON**.

Save the file as **SHELL.CFG**, and make sure you store it in the same directory where your NetWare drivers are stored. Then edit your log-in batch file so it switches to that directory before loading the drivers.

► Give Windows breathing room for multitasking

When you try to run several programs at once, NetWare may shriek 'No available files'. That means the applications have tried to open more than 40 files on the server—NetWare's default limit. Enter **FILE HANDLES=60** on a line by itself in **SHELL.CFG**, and you should be able to multitask in peace.

► Put NetWare utilities at your fingertips

Only a couple of NetWare's utilities are listed when you double-click the Network icon in the Control Panel, but

it's easy to add more. Open **NETWARE.INI** with the Notepad, locate the **[MSW30-Utils]** section, and reference the desired utilities using the *menu title=program command* format. For example, to add **SYSCON**, type:

System Configuration=syscon.exe

If you create **PIF** files for these programs, you can reference them instead.

Save the file and restart *Windows*. To access the utilities, double-click the Control Panel's Network icon, then click the scroll button to the right of the field that is below Start Selected Network Utility.

► Speed Up File Manager

Most users want to view only the files in their personal volume on the network server. But if you click a server drive icon, the File Manager automatically logs on to the drive's root and scans the entire volume, listing directories you probably can't even access.

To keep applications mapped to the right directories—and to speed up operations—restrict File Manager to those directories you want to view. Insert the **MAP ROOT** command in your login script. For example, **MAP ROOT**

F:=SYS:USERS\JSMITH displays the contents of **\USERS\JSMITH** as the contents of drive **F:**.

► Keep Windows and DOS sessions in sync

By default, *Windows* and DOS applications run under *Windows* keep track of NetWare drive mappings independently. So if you add a network drive using the Connect Net Drive command in the File Manager, *Windows* applications (and DOS programs launched thereafter) can access it, but DOS applications already running can't. Likewise, network drives attached with one DOS program can't be seen by *Windows* or other DOS programs.

To keep all drive mappings in sync, add **NetwareShareHandles=true** to the **[NetWare]** section of **SYSTEM.INI**. Once you restart *Windows*, connecting or disconnecting a drive in one session will update all the others.

► Avoid printer problems

Some of NetWare's default print job settings can foul up printing from *Windows* applications. Run NetWare's **PRINTCON** utility, and make sure all the print job configurations used with *Windows* have Auto Endcap and Enable Timeout set to No (otherwise, your print jobs may stop partway through); set Suppress Form Feed to Yes (to avoid feeding a blank sheet of paper after every print job). Finally, turn off *Windows*' own print spooler. Open **WIN.INI**; in the **[windows]** section, and set the spooler to No. ☹

Robert Lauriston is a contributing editor for PC World.

WHERE TO BUY

Windows 3.0 Resource Kit

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052-6399
800/426-9400
List price: \$14.95

Reader service no. 638

AMERICA ONLINE: It's So Good, It's FREE.

AN EXCITING NEW WORLD OF COMPUTING IS JUST TWO SNIPS AWAY.

Clip and return this coupon, and we'll send you—absolutely free—everything you need to start using America's most exciting online service: America Online. We're so sure you'll love America Online, we'll give you the software you need to get started, a free month's membership and one free hour of connect time so that you can explore this fascinating new world of information, computing support, entertainment and personal enrichment.

EASY TO USE, YET POWERFUL.

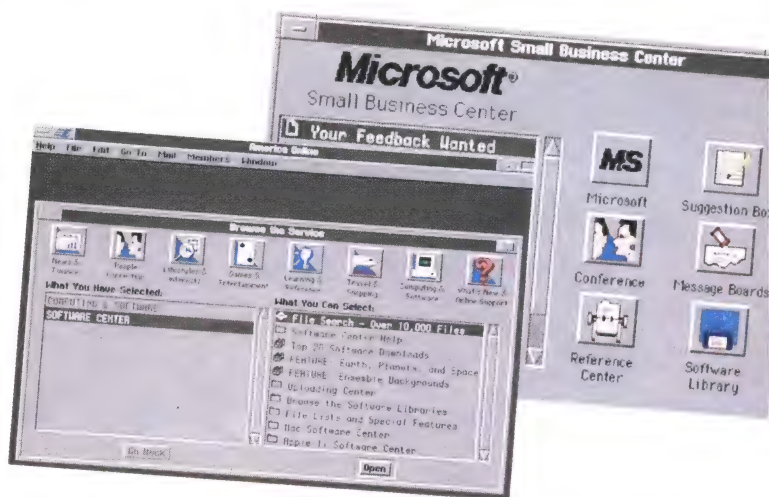
A unique point-and-click environment lets you navigate through America Online's many services quickly and efficiently. You'll be an expert in no time.

Get fast answers from hardware and software developers, reviewers, and computing experts. Scan for objective reviews on thousands of computing products. Browse software libraries filled with thousands of programs you can choose and use offline. Novice or pro, America Online will enhance your computing experience.

You'll profit from America Online in other ways, too. Send and receive electronic mail with ease. Get nightly homework help for the kids. Manage your investments. Get the latest news and weather. Join special interest groups and clubs. Save time and money shopping. Find and book the lowest fares. Entertain yourself with games, quizzes, movie and book reviews, horoscopes, soap opera news, and much more.

ACT NOW FOR 20% LIFETIME DISCOUNTS!

Act now, and get a lifetime 20% discount on America Online's already low hourly connect rates. So find those scissors, clip the coupon (or call today), and get ready to enter an exciting new world of computing.



HURRY! OFFER EXPIRES 10/31/91!

☐ YES! Send me the free software and trial membership. I understand there's no risk—if I'm not thrilled, I may cancel without further obligation.



NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

() _____
HOME PHONE

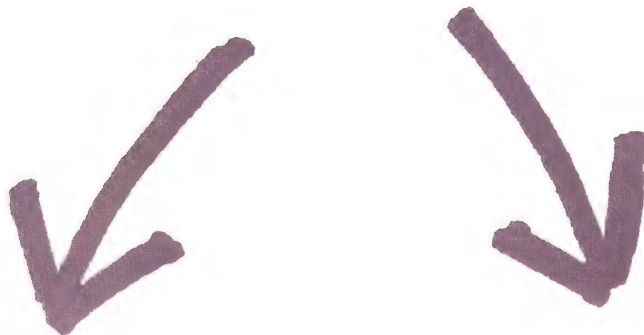
DISK SIZE: ☐ 3.5" ☐ 5.25"

You must have ☐ a PC/XT or higher; ☐ 512K memory or higher; ☐ a hard drive; ☐ a mouse; ☐ a modem; ☐ EGA or Hercules monitor or above to use America Online.

1-800-827-6364 EXT. 5535



THIS COULD BE YOUR LAST PAPER TRANSACTION.



Mail this coupon in today
for your FREE trial of
America Online!

Did someone beat you to our free offer?
Don't worry—call
1-800-827-6364, ext. 5535
to order right now!

NO POSTAGE
NECESSARY IF
MAILED IN THE
UNITED STATES



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 9096 VIENNA, VA

POSTAGE WILL BE PAID BY ADDRESSEE

AMERICA
Online

8619 Westwood Center Drive
Vienna, VA 22182-9806



HURRY! OFFER EXPIRES 10/31/91!

FREE TRIAL! FREE SOFTWARE!

☐ YES! Send me the free software and trial membership. I understand there's no risk—if I'm not thrilled, I may cancel without further obligation.



NAME _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

() _____

HOME PHONE _____

DISK SIZE: ☐ 3.5" ☐ 5.25"

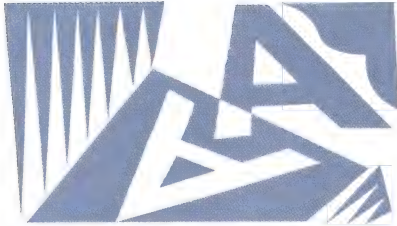
You must have ☐ a PC/XT or higher; ☐ 512K memory or higher; ☐ a hard drive; ☐ a mouse; ☐ a modem; ☐ EGA or Hercules monitor or above to use America Online.

Clip and mail to:

America Online
8619 Westwood Center Drive
Vienna, VA 22182

America Online is a registered service mark of Quantum Computer Services, Inc.

Words Into Print



Word Processing

Tips for getting the most out of your word processor

This month: Speed group editing using WordPerfect's strike-through and redline features, and add pop-up notes to Word and WordPerfect documents.

George Campbell

Producing a group-written document like a company report, a legal brief, or a marketing piece poses special challenges. Unless you're organized, too many cooks can spoil the broth. Printing the document and passing it from editor to editor takes a lot of time, and too many revision marks on paper can render any document downright unfathomable.

Fortunately, most word processors offer group editing tools to streamline work-group projects. These strike-through, redlining, comparison, and annotation features let each member of the work group add and delete text and make comments without obliterating the original document.

In a typical scenario, an author cre-

ates the first draft, then sends it along on disk or via the network to the next editor in line. This editor could use redlining tools to add suggested text, plus an annotation (a pop-up note or comment) to ask a question. The second editor might *strike through* some text for deletion and send the document along to the group leader. After inserting comments, the leader could send it back for another round of editing. Finally, with all changes checked, the redlines, strike-throughs, text, and notes are removed, and the document is printed—for the first time.

Do-It-Yourself Redlining

Even if your word processor lacks redlining, you can devise your own system for group editing. By surrounding inserted comments with special characters or giving them a special attribute (for example, boldface for suggested inserts), you can distinguish edits from regular text at a glance, and even isolate edits made by different people. If your program offers a strike-through, or

"strikeover," attribute, you can use it to identify suggested deletions.

After an editor marks text for deletion, the original author can accept the changes by deleting all slashed text, pick and choose what's to be changed, or argue for a compromise. If you use special characters to identify edits, your program's search tools can help locate them for quick deletion; some word processors even let you search for print attributes like boldface and strike-through. (Tip: Make each comment a separate paragraph.)

This makeshift group editing method gets confusing, however, when multiple editors are adding to and deleting from the same text. That's where redlining comes in. Redlining is like marking a document with a red pencil, using special attributes to indicate additions and deletions. In most programs, such as *WordPerfect*, you can review the changes on screen and then press a key to remove all text marked for deletion and convert suggested additions to normal text.

WORD SHORTCUT

A Word About Annotations

To make comments in a *Word* 5.x document, you can create an annotation that includes the date and time along with the editor's initials. Here's how:

1. Move the cursor to the appropriate place in the text and press **<Esc>fa**.
2. Type in your name or initials and if you want to show the date and time, press **<Tab>y** for each.

3. Press **<Enter>**, then type the comment. To return to the document, press **<Esc>ja**.

You can see your comments at any time—just press **<Esc>ja**. To delete an annotation, simply delete the annotation marker in the text. Your subsequent annotations will be renumbered automatically.

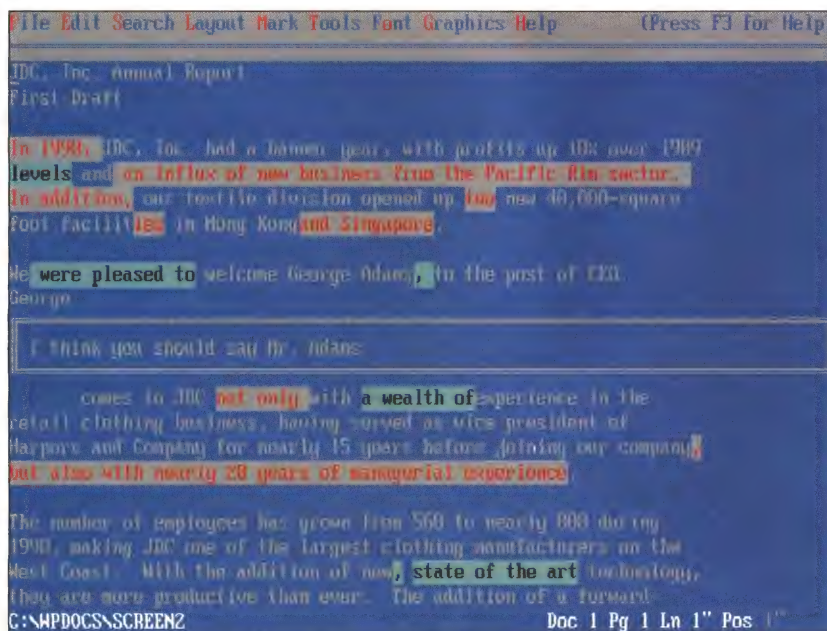
More advanced redliners, such as the one in *Word for Windows*, work more like spelling checkers. When you review a redlined document, the program brings you consecutively to each edit, and prompts you to accept or refuse each one.

WordPerfect and other programs also provide comparison features that let you work backward to see what changes were made on a document. For example, if one editor changes a document without using the redlining feature, you can have the program compare the current version against the previous one and mark all text that has been added or deleted.

To distinguish between different edits, you can save each version of the document under a different file name. Some programs go one better by offering revision-tracking features that indicate who edited what version and when. Some even automatically stamp each version's file name with an incrementally larger number (REPORT01, REPORT02, and so forth).

Often, when editing, you don't want to change the text by yourself, but rather ask the author a question or give general suggestions. That's when you want

pop-up annotations, also called pop-up notes or nonprinting comments. Annotations are much like footnotes, but include a reference, time, and date stamp so you can see who edited what, when. In annotation mode, all the notes appear—otherwise, they remain hidden. If your program lacks annotations, you can use its footnote feature to approximate them. (For more on annotations see this month's Shortcuts.)



If you write documents in teams, your word processor's redlining feature will make it easier to keep track of suggested revisions, additions, and deletions in the text.

WORDPERFECT SHORTCUT

Adding Comments to Documents

To insert nonprinting comments into your *WordPerfect 5.x* document, just use the Document Comment feature. It's a great way for you to gather comments on a document from multiple editors.

1. Place the cursor where you want the comment, then press **<Ctrl>-<F5>cc**.
2. Type the comment in the

box that appears and press **<F7>**.

3. If you want to edit the comment, position the cursor just under the comment, then press **<Ctrl>-<F5>ce**.

4. To incorporate the comment as normal text, place the cursor under the comment box, then press **<Ctrl>-<F5>t**.

Redlining the WordPerfect Way

Here's how you use *WordPerfect 5.x* to redline text. First, we'll add text:

1. Move the cursor to where you want to add text, and press **<Ctrl>-<F8>ar**.
2. Type in the new text, which appears in red.
3. Press **<Cursor Right>** to end redlining.

To suggest deletions, you use a similar procedure:

1. Mark the block to delete by pressing **<Alt>-<F4>** and highlighting text.
2. Press **<Ctrl>-<F8>as**; the text appears in a different color.

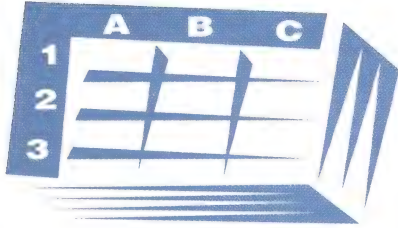
To remove redline markings, mark the block with **<Alt>-<F4>**, then press **<Delete>y**. To remove markings from the entire document, press **<Alt>-<F5>gry**; this deletes the strikeouts and converts additions to normal text.

To remove adds and cuts case by case, move the cursor to the first character of the text in question, then press **<Backspace>y**.

Whether a document is edited by two or twenty, using group editing tools makes it easier to keep track of changes. And you'll save trees in the process. ●

George Campbell is a contributing editor for PC World.

Spreadsheets (A..Z)



Spreadsheets

Practical tips for building better worksheets

This month: 1-2-3 and Quattro users can make macro subroutines part of their macro routine.

Richard Scoville

If you've begun using macros to automate repetitive operations in your worksheets—printing, table building, and so on—macro subroutines can help organize your macros to make them easy to read and edit. In this month's column, we'll introduce subroutines and offer some guidelines for reorganizing your budding macro applications.

So What's a Subroutine?

Think of your macro as a "spreadsheet automaton": Once activated, it executes commands, makes cell entries, and in general does the things you might do from the keyboard. One of the things your macro might do is execute another macro—and a macro called upon by another is termed a subroutine.

For a simple example, take a look at **FIGURE 1**. (To build the model, enter the

labels shown in the figure, then put the cell pointer on B1, select */Range Name Create*, type \w, and press <Enter> twice. Use */Range Name Create* again to give cell B5 the range name DO_IT. Run the macro by pressing <Alt>-W.) When the macro encounters the subroutine call in B2, it goes to the cell named in the command (B5) and performs the actions there. When the subroutine is complete, the {return} statement sends the macro back to the cell following the subroutine call (B3).

Of Menus and Subroutines

Now for a realistic example—the macros that drive a menu-controlled amortization schedule (see **FIGURE 2**). Macro statements are in column I; column H contains labels to identify macro range

	A	B
1	\W	{right}
2		{DO_IT}
3		{left}
4		
5	DO_IT	{beep}
6		{return}

FIGURE 1: A macro run by another macro is called a subroutine. Here, the macro \W calls the subroutine DO_IT, located at B5.

names; comments are in column J. Organizing the menu options around subroutine calls avoids a tangle of macro commands in the menu area and makes the macros easy to read and edit. For example, look at the menu located in rows 20 to 23. When the menu is active, the labels on row 20 form the menu op-

EXCEL SHORTCUT

Cutting Cell Entries Down to Size

Ralph Soucie

Trying to fit all the columns in a worksheet onto one printed page is a recurring problem for spreadsheet users. Quite often, lengthy text entries are the culprit. *Excel 3.0* provides a fast-acting antidote for this debilitating malady.

Let's suppose you need to print a worksheet that includes a "Remarks" column. Because you must fit the entire worksheet onto one printed page, you have only 25 characters in which to fit that column's data. Most of the cell entries in the column will fit nicely, but there are several that run to over 40 characters.

Select the Remarks column, and set the column width to **25**. Choose *Format Alignment*, then choose *Wrap Text*. Any text beyond the 25-character limit will be bumped, word processing style, to a second line within the cell. *Excel* will selectively increase the row heights as needed—except where the row height has previously been set to a fixed value.

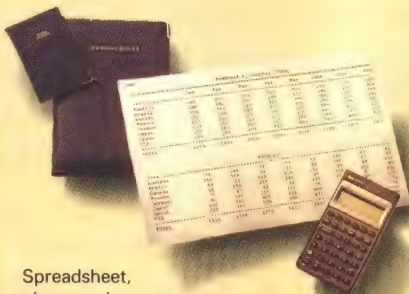
Wrap Text status is an element of cell formatting, so if you change the width later, *Excel* will adjust the line breaks as appropriate.

With Lotus® 1-2-3® and more in the palm of your hand, HP gives you PC power to go

At only 11 ounces, the new HP 95LX palmtop PC carries a lot of weight.

It measures just 6.3" x 3.4" x 1" (closed). And costs only \$699. Yet our new HP 95LX puts real PC power in your hand.

The Lotus 1-2-3 Release 2.2 is the real thing, since we created our palmtop PC in collaboration with Lotus Development Corporation. So it's easy to take your spreadsheets with you. Do "what ifs." Edit files. Attend meetings with all the latest figures in hand.



Spreadsheet, phone and appointment books, and calculator functions are all built in.

But the HP 95LX offers much more than spreadsheets. You can edit memos, and exchange



The optional Connectivity Pack makes our PC an extension of yours.

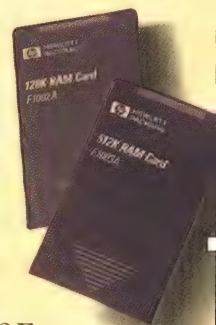
them with your desktop PC's word processor. Built-in organizer tools give you access to phone numbers and addresses. Let you schedule appointments and tasks. And set alarms.

One-key access to and between applications gets you where you want to be easily and quickly. And you can swap files with your desktop PC, using the optional Connectivity Pack. Or over phone lines via an optional modem.

A powerful HP financial calculator is built in, giving you easy access to a wide range of business functions. Data communication software lets you plug into remote

information services such as CompuServe, Dow Jones News/Retrieval and electronic mail.

Add memory and applications with plug-in cards.



How did we get so much into so little? For one thing, we put all the applications in the 1-Mbyte ROM. Leaving most of the 512K built-in RAM for your files. A plug-in slot takes optional RAM and application software cards. And the two AA batteries give you 1 to 2 months of typical use.

A great way to evaluate its power is on your PC. Via our demo disk. Send us the coupon for your copy and product information. Or, if you can't wait, call **800-443-1254** to find the HP retailer nearest you.

You'll see that the HP 95LX is the way to go.

☐ Yes, I'd like a demonstration of the HP 95LX palmtop PC's power. Send me your demo disk* (Enclose \$5 check or money order, made out to Hewlett-Packard.)

☐ Thanks, I just want free product information.

Mail to: Hewlett-Packard
P.O. Box 997
Corvallis, OR 97339-0997

Offer good in U.S. only and while supplies last.
*5 1/4-inch, 360-Kbyte, IBM-compatible disk.
718A

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Business Phone _____



**HEWLETT
PACKARD**

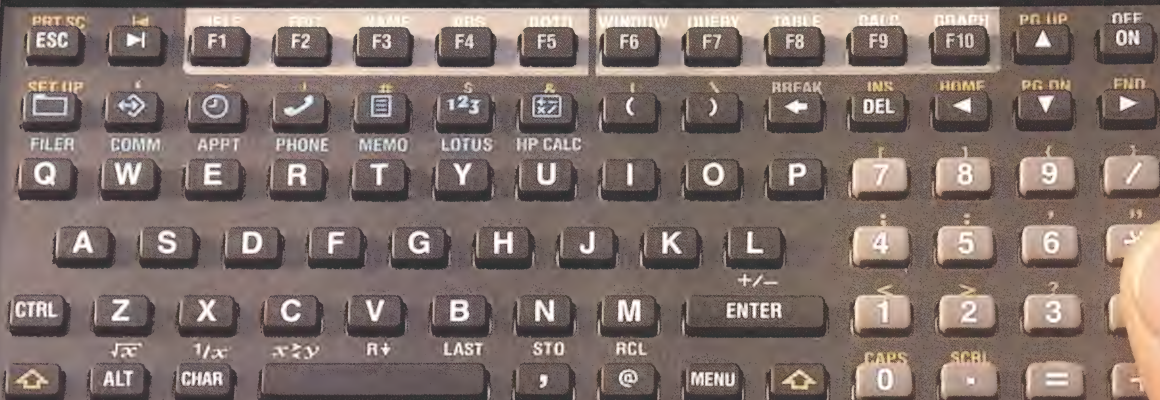
hp HEWLETT
PACKARD 95LX

B11: (F0) @SUM(B3..B10) MENU

	Jan	Feb	Mar	Apr	May
Austria	300	250	325	310	300
Brazil	150	140	150	155	156
Canada	350	360	320	325	350
France	200	210	220	210	250
Germany	210	250	255	240	250
Japan	250	250	220	230	250
Spain	150	140	160	175	175
USA	350	390	405	410	400
TOTAL	1920	1990	2055	2055	2116

Lotus 123

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10



(Actual size.)

©1991 Hewlett-Packard Company. Simulated display. HP 95LX price is suggested U.S. list. Allways™ PrintGraph and Translate are not included in the HP 95LX. Lotus and 1-2-3 are U.S. registered trademarks and Allways is a U.S. trademark of Lotus Development Corporation. CompuServe is a U.S. trademark of CompuServe, Inc. PG12101A

tions; those on row 21 appear as menu prompts. When the user selects an option, 1-2-3 proceeds to the next command in that column, here a subroutine call. For instance, selecting *INPUT* executes the subroutine call in I22 and sends the macro to the \INPUT subroutines in I25. When it's finished, the {return} in I28 sends the macro back to I23.

In fact, the entire menu is itself a subroutine. In I17, the command {menucall \M_MAIN} activates the menu and waits for a user selection. Once the selected subroutine is complete, the {return} in row 23 sends the macro back to the {branch} command in I18, which loops back to the {menucall} in I17 and restarts the menu.

Anatomy of a Subroutine

A well-tempered subroutine has a standard five-part structure: null command; checks; setup; processing; and reset and return.

The null command ({})—see I25, I30, I50, and I57—does nothing save pass macro control along to the next command; thus, it provides a convenient place to insert a new command at the beginning of the subroutine—you won't have to rename the starting cell. Just position the cell pointer on the row just below the null command and insert a row with /Worksheet Insert Row, and you've got room for a new command.

The check commands ascertain that it's OK for the macro to proceed and terminate it if not. Consider the subroutine \TABLE in I30..I46, which rebuilds the amortization schedule when the number of payments has changed. The {if} statement in I31 tests whether the number of loan payments is large enough to process the table; the one in I32 aborts the subroutine if the number of payments entered by the user in I_PERIODS is unchanged since the last time \TABLE was executed (the previous value of I_PERIODS is recorded in the variable \V_PERIODS, cell I48).

The setup statements in I33..I34 prepare for the subroutine by positioning

G	H	I	J	K	L	M	N
11	MACROS						=
12							
13	Name	Macro					Comments
14							
15	\M	(break)					Cancel pending operations
16		(paneloff)					Turn off command line
17	\M_1	(menucall \M_MAIN)					Start menus
18		(branch \M_1)					Branch to menus
19							
20	\M_MAIN	INPUT	TABLE	BROWSE	PRINT	EXIT	
21		Enter new data	Update the View the taPrint the cleave macros				
22		(\INPUT)	(\TABLE) (\BROWSE) (\PRINT) (\home)				
23		{return}	{return} {return} {return} {quit}				
24							
25	\INPUT	()					Insertion line
26		(goto)\INPUT-					Position cell pointer
27		/rll INPUT(panelon)-(paneloff)					Data entry
28		(calc){return}					Finished
29							
30	\TABLE	()					Insertion line
31		(if I_PERIODS<4){beep}{return}					If table too small, quit
32		(if I_PERIODS=\V_PERIODS){return}					If table OK, return
33		(goto)\TABLE-(goto)T_PRINT-					Position cell pointer
34		(indicate "WAIT")(windowsoff)					Set mode indicator & suppress screen
35		(blank T_ROWS)					Rebuild table
36		(goto)T_ROWS-					
37		/df(bs).(d I_PERIODS-3)-3-1-I_PERIODS-					
38		/rff0-(end)(d)-					
39		{r}{u}					
40		/c(end){r}-(d).(l){end}(d){r 4}-					
41		(calc)					
42		/rncT_PRINT-(esc).(end)(d)(end){r}-					Re-create table range names
43		/rncT_ROWS-(esc).(end)(d)(end){r}-					
44		(let \V_PERIODS,I_PERIODS)					Reset table size indicator
45		(indicate)(windowson)					Reset mode indicator and screen
46		{return}					
47							
48	\V_PERIODS		240				
49							
50	\BROWSE	()					Insertion line
51		(goto)\TABLE-(goto)T_PRINT-					Position cell pointer
52		/wtb					Lock the titles
53		(?) (break)					Pause while user moves around
54		/wtc					Clear the titles
55		{return}					Return
56							
57	\PRINT	()					Insertion line
58		/ppca					Clear current print settings
59		rI_PRINT-ag					Print input range
60		crrT_PRINT-					Set table print range
61		brT_BORDER-q					Set border
62		gpq					Do it
63		{return}					Return
64							
65							

FIGURE 2: Macros for an amortization worksheet. Menu options (I20..M23) call subroutines for data entry, rebuilding the schedule of payments, browsing, and printing the schedule.

the screen and cell pointer, setting the mode indicator to tell the user to wait until the subroutine is finished, and turning off the screen.

The subroutine proper runs from I35 to I43. It erases the current table, builds a new one with /Data Fill and /Copy, then redefines the range names covering the new table, to be used the next time the table is printed or rebuilt.

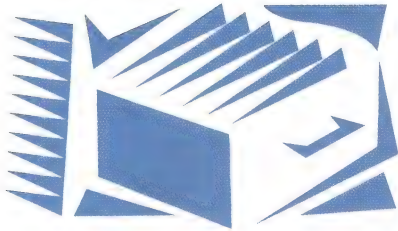
Finally, the commands in I44..I46 reset \V_PERIODS to reflect the current

table size; reset the mode indicator; turn the screen back on; and return to the menu.

Macros should save your time, not cause you to waste it through endless debugging and head scratching. Subroutines can help you get it right the first time. ●

Richard Scoville and Ralph Soucie are contributing editors for PC World.

Data Basics



Data Management

Tips and techniques for managing your data

This month: Say it with text.

Steve Cummings

Learn a few text-related skills, and you'll have an easier time finding and presenting information. By manipulating text, you can easily enhance your on-screen displays and printed reports, adding personal salutations and other messages. And when the details you want to extract are stored within larger fields, text functions can help you dig out those nuggets of information.

Let's start with something simple: Using the plus sign, you can combine, or *concatenate*, two or more *text strings* into a single message. A text string is a set of one or more letters, punctuation marks, or numbers. 'John Bartleby', 'Y', '342-B 7th St.', and 'Call me Ishmael' are all strings. To personalize a mailer with messages such as 'It's your lucky day, Herman', include the concatenated expression "It's your lucky day, " + First_Name in your form-letter design. As this example suggests, a string can be something you've typed directly be-

tween quotation marks ("It's your lucky day,") or the contents of a character or text field (First_Name) or variable.

But concatenating isn't always as simple as it might appear. At first glance, 'First_Name + Last_Name' seems the obvious way to turn two name fields into a complete name. But the First_Name field is usually longer than the actual name inside it, producing results like 'Herman Melville'. In many programs, including *dBASE III Plus* and its clones, the remedy for extra spaces lies in the TRIM() function. An expression like 'TRIM(First_Name) + Last_Name' eliminates all those unnecessary blanks. The trouble is, it also removes the *necessary* one, producing

the likes of 'HermanMelville'. To avoid such an eyesore, just add a space to the expression, turning it into **TRIM(First_Name) + " " + Last_Name**. *Paradox* automatically trims fields for you, but you must still insert the extra blank: **First_Name + " " + Last_Name**.

The Right Piece of String

Sometimes you want only a portion of a text string. Let's say your company's part numbers contain several key pieces of information, such as a part type, a factory code, and the item's shelf life. The resulting number might look something like '18392-12-EC-02'. In such cases, rather than adding strings together, you'll want to glean pieces of

dBASE SHORTCUT

In the General Area

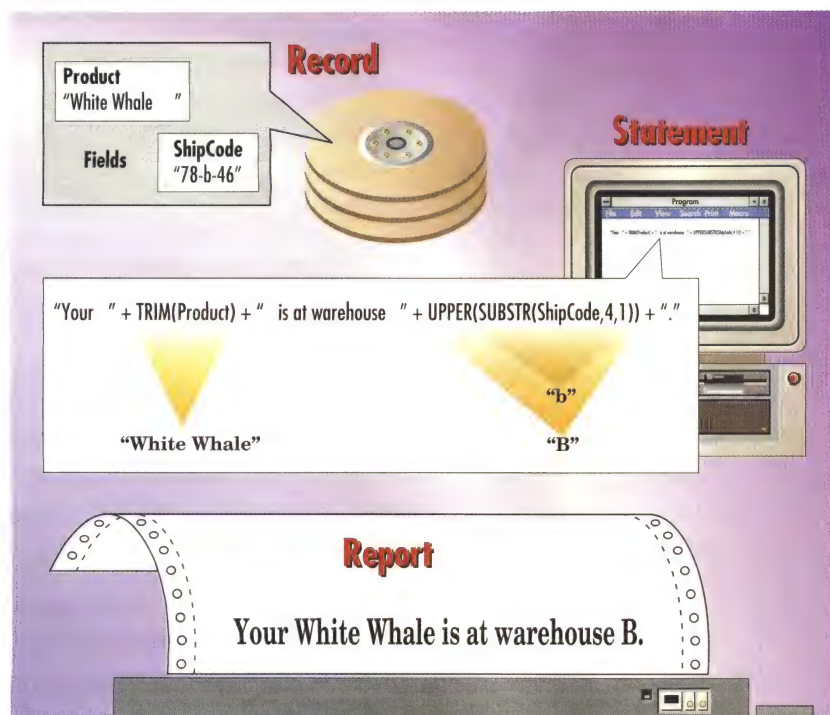
Lincoln Spector

When setting up a report that includes phone numbers, you may want to print only those area codes you'll have to dial—those other than your own. Thanks to various functions available inside the report writer, you can do this in virtually any version of *dBASE* and its clones.

Assuming your Phone field is formatted (999)999-9999, insert the statement **IIF(SUBSTR(Phone,2,3) = "your area code", RIGHT(Phone, 8), Phone)**, rather than the simple field name Phone, in your report design. For instance, if your area code is 415, use **IIF(SUBSTR(Phone,2,3) = "415", RIGHT(Phone,8), Phone)**.

How does this work? The IIF function tests its first argument, SUBSTR(Phone,2,3) = "415", to see if it's true. If Phone's 2nd through 4th characters (the area code) are 415, the argument is true, and IIF() prints the result of the second argument, RIGHT(Phone,8). The RIGHT() function prints the *last* characters in a field, in this case the last 8—the phone number. If the area code isn't 415 and the SUBSTR() argument is false, the result of the third argument—the complete Phone field—is printed. Either way, you get the number you need to dial.

Anatomy of a Sentence



By combining straight text in quotation marks with various data fields and functions, you can mass-produce complete sentences modeled for your customers.

PARADOX SHORTCUT

A Case for Conversion

Celeste Robinson

It's easy to set up a *Paradox* field—for instance, a State field using abbreviations—so you can enter only uppercase letters in it. A simple *ValCheck* will do this. But what if you need to convert a field after the fact? What if you've got a table with thousands of lowercase state abbreviations already typed in, and you need them capitalized? Luckily, the *SCAN* command makes this task easier than it might seem.

First, if you're not already viewing the table in question, press **F10** for the main menu, select *View*, and then the

appropriate table. Once the table is on screen, press **<Alt>-<F10>** for the PAL menu, and choose *Miniscript*.

At the Command prompt, type **EDITKEY SCAN [Fieldname] = UPPER([Fieldname]) ENDSCAN**, where *Fieldname* is the field you want to convert. For instance, to capitalize all the abbreviations in a field called State, use **EDITKEY SCAN [State] = UPPER([State]) ENDSCAN**. Press **<Enter>**, and all lowercase letters in the field, throughout the entire table, will be converted to uppercase. Press **<F2>** to save the converted table to disk.

them. A segment of a string is called a substring, and in the dBASE world, the function for unearthing substrings is *SUBSTR()*. If the 2-digit factory-of-origin code starts with the 7th character in the PartNo field, you can pull it out with the statement **SUBSTR(PartNo,7,2)** (PartNo is the string containing the substring, 7 is the position of the character starting the substring, and 2 is the substring's length). This function is *SUBSTR()* in *Paradox* and *SGET* in *R:base*.

To maintain a uniform style for items in your reports, you can use a couple of functions that convert entire strings to uppercase or lowercase letters (numerals and punctuation marks are unaffected). *UPPER()* and *LOWER()* do the trick in dBASE and *Paradox*; if the First_Name field contains the name 'Queequeg,' the statement **UPPER(First_Name)** returns 'QUEEQUEG'. *R:base* calls these functions *LUC()* and *ULC()*, respectively.

Most data managers offer more tools for manipulating text than we've discussed here. But these simple tricks will get you started on handling the words inside your data.

Have unmanageable data? Or a tip you'd like to share with other PC World readers? Next month, Data Basics inaugurates a new format, answering questions and offering tips from readers. We'll pay \$50 for every tip used. Send your questions and tips to Data Basics, PC World, 501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). We cannot acknowledge submitted materials. ☛

Steve Cummings is the author of Understanding Quicken (Sybex, Alameda, California, 1990) and a PC World contributing editor. Celeste Robinson is the author of The Best Book of Paradox (Howard W. Sams and Co., Carmel, Indiana, 1990). Lincoln Spector is a PC World assistant editor.

The Art of Persuasion



Publishing & Graphics

Expert advice for creating high-impact documents and presentations

This month: Using clip art effectively, and enhancing PowerPoint charts

Richard Jantz

Sometimes the best way to make your point is to draw somebody a picture; unfortunately, few of us have the talent to produce quality artwork or the budget to hire a professional artist. But even if you're slow on the draw, there's still a cheap and easy way to get good-looking images into your presentations: electronic clip art.

Clip art ranges from simple graphic symbols like arrows and banners to complex illustrations of people, places, and objects. While presentation packages like *Harvard*, *Freelance*, and *PowerPoint* come with clip art libraries, they're fairly limited—you may prefer the wider variety of images found in a clip art collection.

Clip art collections typically are organized around themes such as busi-

ness, travel, or maps and come in one of three formats, which you can usually identify by its file extension. Bit-map files such as PCX and TIFF provide the most realistic pictures, but the images often display jagged edges when enlarged or projected. For simple line drawings, vector files such as CGM and WMF provide sharp output at all sizes and resolutions. Encapsulated PostScript (EPS) files produce the highest-quality art, provided you have a PostScript printer or film recorder.

Clip art can bring your presentation to life or turn it into an eyesore. The key to success is selecting an artistic style that matches your audience, subject, and company identity, then using it consistently. A picture of Homer Simpson holding your company's product might liven up a weekly sales meeting but is unlikely to win you points with the

board of directors. And since images are so powerful, you should use them sparingly; save clip art for the one or two key points you want your audience to remember.

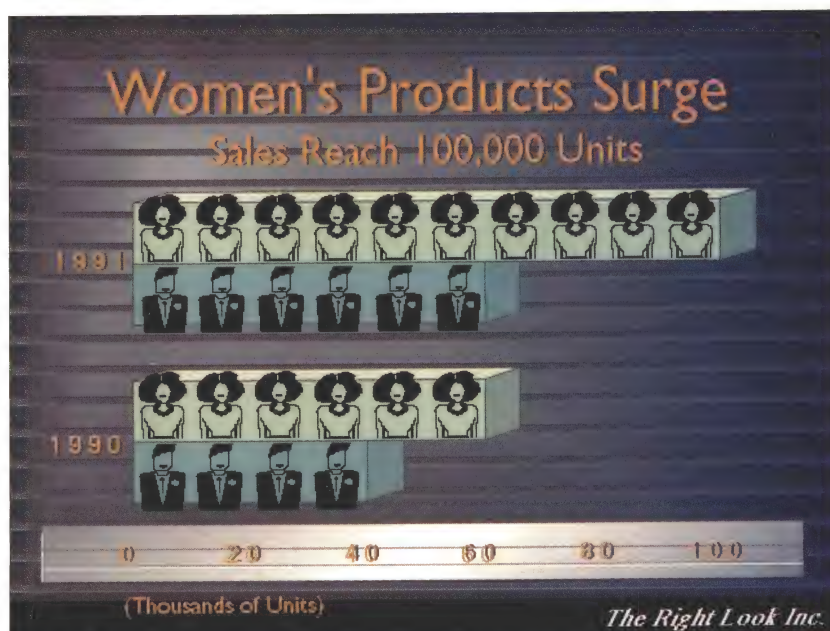
Getting to the Art of the Matter

Here are some guidelines for using images in your slides, overheads, and handouts.

☞ The most common graphic in presentations is a company logo. Place it at the top or bottom of every slide, flush left or flush right, large enough to be seen but not obtrusive.

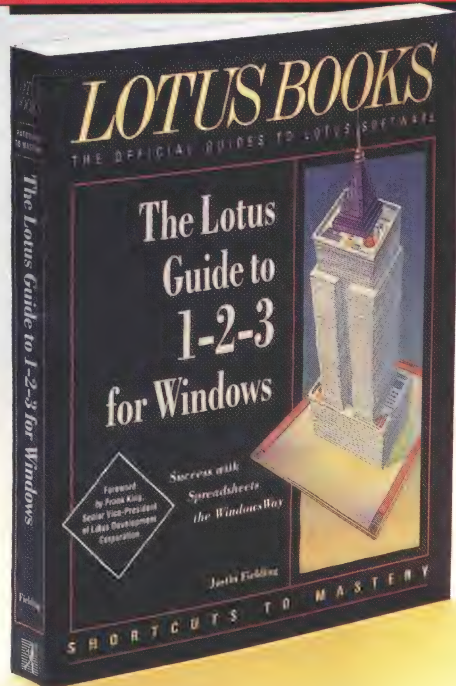
☞ As a rule, a single clip-art image works better than several pictures that compete for attention. If you must use multiple images in a slide—say, to show a relationship between objects—make the most important image at least 10 percent bigger.

Helping Your Audience Get the Picture



SCREEN 1: Clip art symbols can turn an ordinary data chart into a memorable one. To create this pictograph, we used Microsoft's PowerPoint to create a horizontal bar chart and pasted symbols of a man and a woman on top of each bar. To help the symbols stand out, we removed the chart's axes, tick marks, and legend.

LOTUS BOOKS presents... the insider's guide to 1-2-3 for Windows



The Lotus Guide to 1-2-3 for Windows is packed with techniques the experts have perfected for building worksheets the new way: under Windows, in 3D, using multiple worksheets, and producing spectacular graphical reports. Inside you'll find in-depth coverage of SmartIcons—the time- and step-saving tools that automate the tasks you perform most—plus new graphics and spreadsheet publishing features.


- **A special section** on macros—how to create them and when to use them, plus great new macro features.

- **Tips on how** and when to use the Solver and Backsolver goal-seeking technologies to better manage your business.

- **New ways** to harness the power of Windows—using the Clipboard and DDE, Windows' memory management features, and more...

To order, visit your local bookseller or call **1-800-223-2348**. Booksellers order through your wholesaler or call **1-800-223-4022**

September 1991/608 pp./\$24.95
ISBN 0-13-529363-4

Published by Brady, a division of  Simon & Schuster, in association with Lotus Publishing

Brady

Circle 135 on reader service card

PC WORLD

TAKING CARE OF BUSINESS

THE PC WORLD SUBSCRIBER HOTLINE

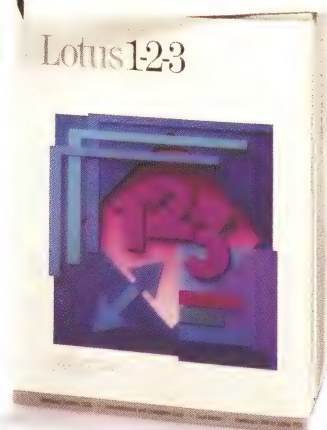
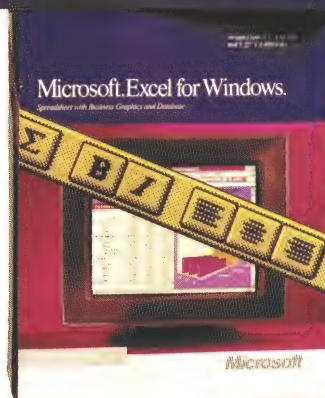
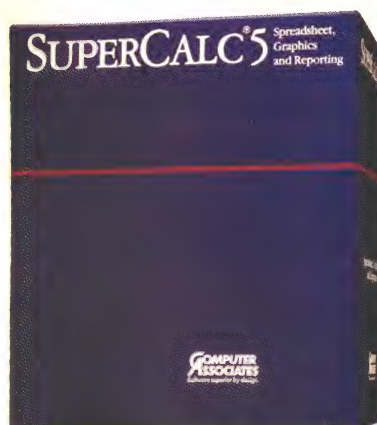
Do you have a subscription problem that needs attention? Are you moving? Have an address change? Do you need to check your expiration date?

For the fastest service simply call our toll-free subscriber hotline: 1-800-234-3498 between the hours of 6:00 AM and 8:00 PM, Mountain Time.

Or if you prefer, write us at :

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

1.
2.
3.



What The Experts Think.

Recently, *VARBUSINESS* conducted a survey of some people who know more about spreadsheets than anyone.

The people who sell, install, and support them for a living. The survey asked hundreds of spreadsheet dealers and resellers all kinds of questions about the top-rated spreadsheets. They were trying to find out what the experts rate as the best spreadsheet. And the experts told them.



CA's Computing
Architecture For
The 90s Protects
Your Investment.

SuperCalc®5.

In virtually every category from ease-of-use to technical support, SuperCalc5 was rated higher than Lotus® 1-2-3® and Microsoft® Excel.

We're not surprised. While Lotus and Microsoft have been fussing over their many different spreadsheet versions, we've been stuffing one spreadsheet, SuperCalc5,

with everything you would ever want. From spreadsheet linking to 3-D graphics and beautiful, presentation-quality output, SuperCalc5 has it all. And it runs on just about any PC.

But the best part is something they forget to ask about. The price.

At \$149.00, SuperCalc5 Costs Less Than Half The Price Of Lotus 1-2-3 And Excel.

Heard enough? Call 1-800-645-3003 today for the name of the nearest dealer where you can buy the best spreadsheet there is.

If, you're willing to spend a couple hundred dollars less.



NUTS & BOLTS

Art for Charts' Sake in PowerPoint

Adding clip art to a *PowerPoint* chart is easy—the hard part is getting it to align properly, especially if you need to align multiple symbols inside a data chart (as in **SCREEN 1**). The trick is to use the program's magnetlike *grid* (a network of horizontal and vertical lines) and *guides* (a movable pair of straightedges) to "snap" each item into place.

First, open a *PowerPoint* clip art file and copy the desired image to the Clipboard, then open your chart and paste in the object. (You also can add an image from another application by using the Edit menu's *Paste*

from command.) Resize and crop (edit) the image if necessary, then select the Draw menu's *Snap to grid* option. Although the grid remains invisible, when you move an object it will snap to the nearest horizontal and vertical grid lines.

If you need to fine-tune the alignment, select the Draw menu's *Ignore grid* and *Show guides* options. Then drag the program's snap-to guides to where the top left (or top right) portion of the object should be. When you move the object near either guideline, its edge will automatically snap to the guide.

☛ Use clip art to guide viewers' eyes toward important information. For example, if you use an image of a face that is looking toward the edge of the slide, flip it to face your text or data.

☛ A picture loses impact if your audience has seen it before. That's why you should customize your clip art—change its colors, remove part of it, or combine it with other graphic elements to distinguish it from similar images used in other presentations.

☛ Use a decorative banner or border to make your title slides stand out. Make sure the banner complements your text; as a rule, sans serif text (such as Helvetica) works best with borders made of thick lines, while serif text (such as Times Roman) looks good with thin lines or combinations of thick and thin.

☛ Use simple clip art instead of bullets to make text charts stand out. Arrows, check marks, pushpins, or pointing fingers can help emphasize your key points.

☛ Use more complex clip art as a border or background for your most important data chart. For example, place a line chart showing PC sales figures inside a computer screen, or superimpose an international sales chart over a world map.

☛ Use clip art to create *pictographs*, which use a series of picturelike symbols to convey data. For example, the pictograph in **SCREEN 1** uses a combination of horizontal bars and male and female icons to compare product sales by gender. For a balanced design, try to use horizontal icons for vertical bar charts, and vertical icons for horizontal bar charts.

Finally, remember that many clip art libraries are protected by copyright. Be sure to read the copyright provisions carefully before you use clip art in any presentation. ●

PC World contributing editor Richard Jantz is author of *Ventura for Windows 3.0* (John Wiley & Sons, New York, 1991).

DESKTOP PRESENTATIONS TOOLBOX

No-Nonsense Clip Art

Want to build a clip art collection but don't know which product to choose? Two good choices for business use are ArtRight Software's *Image Portfolios* and 3G Graphics' *Images with Impact*.

Image Portfolios' high-quality color graphics come in a variety of file formats, including EPS, CGM, and GEM as well as Corel Draw's CDR and Micrographix Designer's DRW. *Images with Impact* is a mixed bag: Some volumes come in color; some black-and-white, and all in EPS, though a conversion utility (bundled with certain volumes) lets

you convert images into CGM, PCX, and TIFF.

Choose either product for first-rate images of contemporary people, places, and things you can use to enhance your business presentations.

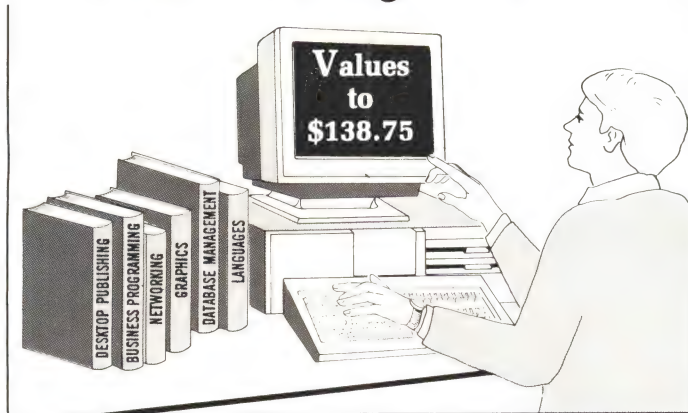
ArtRight Image Portfolios \$149 per volume; ArtRight Software, 1130 Morrison Dr. #330, Ottawa, Ontario, K2H 9N6 Canada; 613/820-1000, 613/820-2651 (fax)

Reader service no. 661

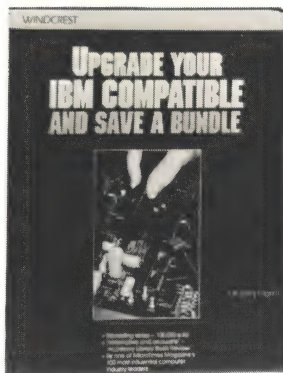
Images with Impact \$99 to \$189 per volume; 3G Graphics, Inc. 11410 N.E. 124th St. #6155, Kirkland, WA 98034; 800/456-0234

Reader service no. 662

SELECT 5 BOOKS for only \$4⁹⁵



The two most comprehensive computer book clubs have joined forces to bring you the largest selection of business and personal computing references available . . . at savings up to 50% off publishers' prices!



3828 \$29.95



3641 \$34.95
Counts as 2



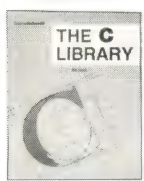
3720 \$26.95



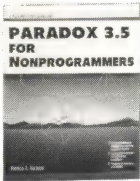
3628 \$26.95
Counts as 2



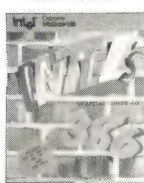
3679P \$22.95



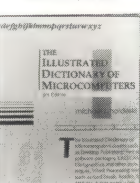
15063P \$19.95



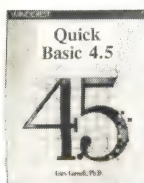
3415P \$21.95



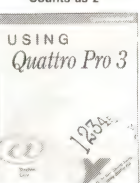
881693-9P \$29.95



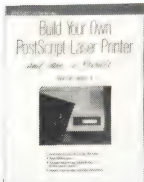
3368P \$19.95
Counts as 2



3782P \$22.95



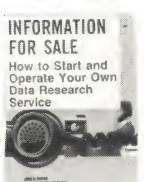
881736-6P \$27.95
Counts as 2



3738 \$26.95



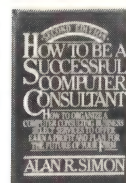
3332P \$24.95



3057P \$15.95



9309P \$28.95
Counts as 2



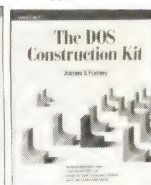
9339 \$29.95
Counts as 2



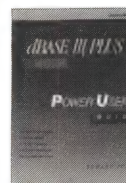
3617P \$29.95
Counts as 2



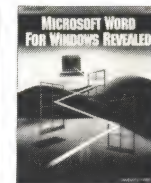
3331P \$14.95



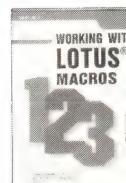
3563P \$22.95



15064P \$22.95



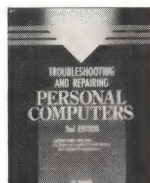
3799P \$24.95
Counts as 2



3298P \$19.95



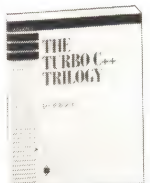
9417P \$24.95
Counts as 2



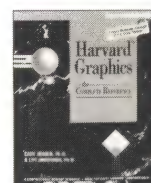
3677 \$34.95
Counts as 2



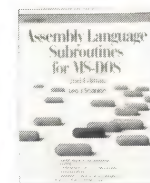
3382P \$29.95
Counts as 2



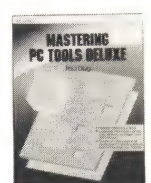
3300P \$24.95



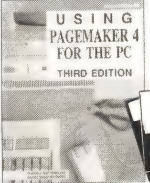
881621-1P \$27.95
Counts as 2



3649P \$24.95
Counts as 2



3578P \$16.95



881629-7 \$26.95
Counts as 2



10035 \$49.95
Counts as 2



The Computer Book Club
with the **BYTE Book Club**

Membership Benefits

The Computer Book Club and the BYTE Book Club have joined forces to bring you the largest selection of business and personal computing titles available today.

- **Big Savings** In addition to this introductory offer, you keep saving substantially with members' prices of up to 50% off the publishers' prices.
- **Bonus Books** Starting immediately, you will be eligible for our Bonus Book Plan, with savings of up to 80% off publishers' prices.
- **Club News Bulletins** 15 times per year you will receive the Book Club News, describing all the current selections—mains, alternates, extras—plus bonus offers and special sales, with scores of titles to choose from.
- **Automatic Order** If you want the Main Selection, do nothing and it will be sent to you automatically. If you prefer another selection, or no book at all, simply indicate your choice on the reply form provided. You will have at least 10 days to decide. As a member, you agree to purchase at least 3 books within the next 2 years and may resign at any time thereafter.
- **Ironclad No-Risk Guarantee** If not satisfied with your books, return them within 10 days without obligation!
- **Exceptional Quality** All books are quality publishers' editions especially selected by our Editorial Board.

PCW991

All books are hardcover unless number is followed by a "P" for paperback.
A shipping/handling charge and sales tax will be added to all orders. (Publishers' Prices Shown)
If card is missing, use this address to join:

©1991 THE COMPUTER BOOK CLUB, Blue Ridge Summit, PA 17294-0820

Circle 49 on reader service card



3049 \$37.95
Counts as 2



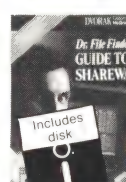
15018P \$19.95



881708-0P \$19.95



881715-3P \$14.95



15057P \$39.95
Counts as 2



3534P \$27.95
Counts as 2

**2MB's of
Memory
expandable
to 16 MB's**

**16MHz's
80386SX
Processor**

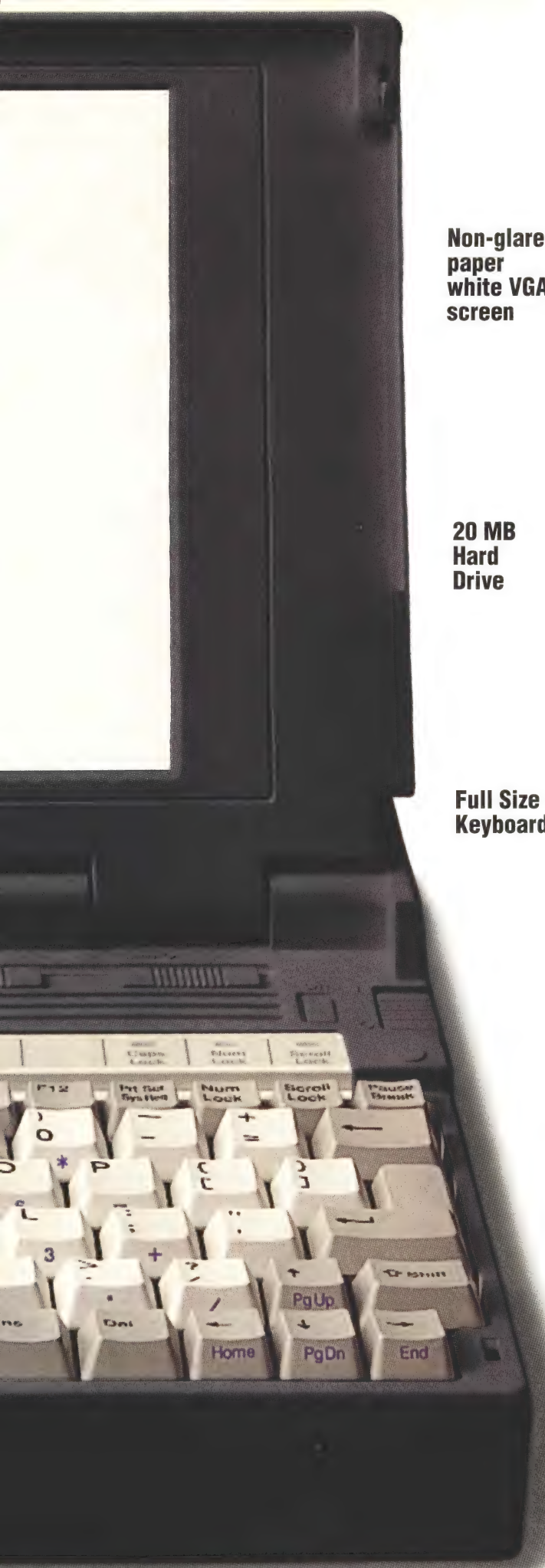
**DIMENSIONS:
8.6"D x
11"L x
2.1" H**

**3.5"
Internal
Diskette
Drive**

\$2195

PC BRAND™

Also Available
20 MHz, 40 MB Hard Drive
\$2,995



Non-glare,
paper
white VGA
screen

20 MB
Hard
Drive

Full Size
Keyboard

ACTUAL SIZE. ACTUAL PRICE.

Place this magazine across your lap. Looks pretty good, doesn't it? And at this price, it will also fit comfortably in your budget.

Specs:

- 16 MHz 80386SX processor, •2 MB RAM, •20 MB hard drive, •1.44 MB 3.5" internal diskette drive, •parallel port, •2 serial ports, •VGA monitor port, •VGA-32 Grey Shades, •9 inch non-glare VGA display, •power management system for extended battery life, •3 hour battery pack, •AC adapter, •8.6" D x 11" L x 2.1" H, 6.5 lb., •external keyboard connector.

Options:

- 40 MB and 60 MB hard drive, •memory upgrade kits to 16 MB, •internal modem, •fax modem, •three-slot expansion docking station, •pocket LAN adapter, •add-on numeric keypad, •automobile adapter, •extra battery pack, •MS-DOS[®], •nylon or leather carrying case, •Microsoft[®] Windows[™], •mouse.

All Systems also Include:

- 30-Day No Risk Money Back Guarantee
- 1 Year Warranty
- Unlimited Toll-Free Service and Support
- Tech Support Bulletin Board

Call Today:

- For information and prices on our full line of PC Brand systems
- About our matching portable printers

Look and Compare Our 20 MHz, 40 MB System.

Features	PC Brand 386sx/20	Compaq LTE 386s/20	Dell System [®] 320N
Max RAM	16 MB	10 MB	5 MB
Base RAM	2 MB	2 MB	1 MB
Hard Drive	40 MB	30 MB	30 MB
Hard Drive Option	60 MB	60 MB	60 MB
Screen	VGA	VGA	VGA
Dimensions	8.6" D x 11" L x 2.1" H	8.5" D x 11" L x 2.2" H	8.5" D x 11" L x 2" H
Weight	6.5 lbs	7.5 lbs	6.4 lbs
Price	\$2,995.00	\$4,399.00*	\$3,399.00*

*List prices published by IDC and Hard Facts, April 1991.

PC BRAND[™]

Call 1-800-PC Brand

TEL 1-800-722-7263 FAX 1-800-722-7392

PC Brand, Inc. 877 Supreme Drive, Bensenville, IL 60106
International Fax #708-616-2888 International Voice
#708-860-2300. We are open Mon. thru Fri.: 7am to 7pm; Saturday
8am to 4pm Central Time. MasterCard, VISA, Discover, PC Brand
Direct Advantage MasterCard, Checks & Approved P.O.s Accepted.
Prices & specifications subject to change. 386SX, 387, 486 are
Trademarks of Intel Corporation.

WOR991

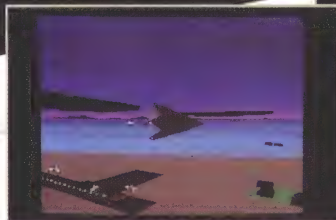
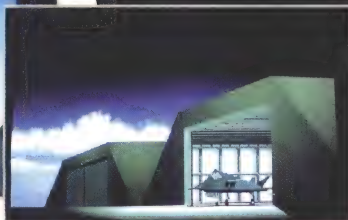
Circle 198 on reader service card

Air Superiority...

"Mr. President, We Have A Target-Rich Environment."



IBM-PC screens shown.



Fly the plane that baffled Baghdad radar systems and air defenses during the Persian Gulf War, the plane specifically designed for dangerous solo missions behind enemy lines.

F-117A Nighthawk Stealth Fighter 2.0 is a dramatic advancement of *F-19 Stealth Fighter*, MicroProse's critically acclaimed simulation of the radar-elusive jet, named Best Simulation of the Year in 1989. With **more worlds, more action, better and bolder graphics** and MicroProse's legendary dedication to authenticity and excitement, *F-117A* represents a new breed of combat flight simulator.

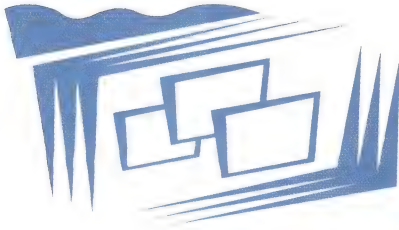
For IBM-PC/Tandy/compatibles. For the latest information on release dates and availabilities, call MicroProse Customer Service at 301-771-1151, 9 am to 5 pm EST, weekdays. © 1991 MicroProse Software, Inc., 180 Lakefront Drive, Hunt Valley, MD 21030.

- Dramatic sprite explosions and smoke.
- New, more accurate cockpit and in-plane graphics.
- Graduated horizons, landscapes, and seascapes in VGA.
- Spectacular night graphics with special night HUD features.
- Authentic graphic representation of the F-117A, in 3-D with more polygons and detail.
- Improved mission generation with brand new challenges and scenarios.
- Nine worlds in which to fly, including Cuba, North Korea, the Kuwaiti Theatre of Operations, Central Europe, Vietnam and the Middle East.
- Improved, more challenging enemy Artificial Intelligence.
- Totally updated sound package including original new music and digitized speech.

MICRO PROSE™
SIMULATION • SOFTWARE

Circle 167 on reader service card

Windows Workshop



Windows

Practical advice on mastering Windows 3.0

This month: More WIN.INI tune-up tips

Jesse Berst and Scott Dunn

In our last exciting episode, we discussed how to customize *Windows* by editing the WIN.INI file, which resides in the *Windows* subdirectory. In this installment, we'll expand our repertoire and make *Windows* automatically download fonts for PostScript printers, activate changes to WIN.INI immediately, and more.

One-Stop Downloading

If you use a PostScript printer, you probably know that most *Windows* applications will default to using only the printer's built-in fonts. Fonts stored on disk must be manually downloaded to the printer's memory—a pain if your documents use lots of fonts or if you share a printer with co-workers who use different fonts than you do. The solution? Make WIN.INI automatically download the fonts you need.

When you install downloadable, or

"soft," fonts under *Windows*, WIN.INI references printer font metric (PFM) files, which supply character spacing information. For example, install the soft font Helvetica Black Oblique, and you'll find the line 'softfont1=c:\psfonts\pfm\hvblo____.pfm' under the [PostScript,port] heading in WIN.INI.

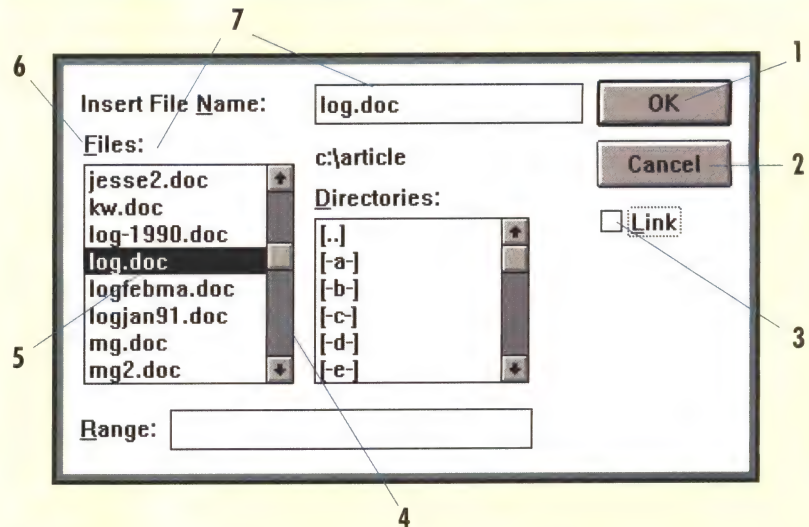
Note that the line refers only to the PFM file, not to the font itself. To automatically download the font, you'd add a comma (no space) and type in the font's drive, path, and file name on the same line. (Most font files have the same name as the PFM file, but a different extension, such as PFB.) To auto-download Helvetica Black Oblique, the line would

be 'softfont1=c:\psfonts\pfm\hvblo____.pfm,c:\psfonts\hvblo____.pfb'.

Type in the information with care, because *Windows* will not debug WIN.INI or alert you if it contains typos. Save WIN.INI, restart *Windows*, and you're set.

The trade-off for this convenience is slower printing: Instead of downloading the fonts for the entire document all at once, WIN.INI will now download the fonts one page at a time, then flush them out. The advantage? If printer RAM is low, you can still print documents that incorporate a lot of fonts. To save time, manually download fonts that get heavy use throughout a document, such as

Timesaver Tips for Dialog Boxes



1. Press <Enter> to "click" the selected button—usually 'OK'.
2. Press <Esc> to cancel action or exit dialog box.
3. Press <Space> to toggle a selected check box on or off.
4. In a list box, press <Page Down> or <Page Up> to jump one boxful.
5. In a list box, press first letter of item to select it; press again to jump to next item.
6. Press <Alt> plus the underlined character to jump to that field or select that button.
7. Press <Tab> or <Shift>-<Tab> to jump from field to field.

Tired of dragging the mouse around to select files and confirm commands? These dialog box keyboard shortcuts can save you time and mouse mileage.

WINDOWS TOOLBOX

A Smarter PostScript Driver

After hashing around a while in WIN.INI, you may find yourself dreaming of greener pastures. Wouldn't it be great if you could switch between automatic and manual font downloading at the click of a button? Or download fonts from inside an application? Or even adjust the angle and frequency of screen tints and halftones without messing around with PostScript commands?

You can, thanks to the \$199.99 *Micrografx PostScript Driver v. 2.6*. If you already have *Designer 3.1* (or earlier *Windows 3.0* programs from Micrografx), you can use the MGXPS.DRV file.

Either way, just copy the driver to \WINDOWS\SYSTEM subdirectory and use it instead of your current PostScript driver. Select it from within an application, and you'll find copious

controls: the ability to install, display, and manually or automatically download fonts; to dictate pattern and curve quality; to access more PostScript printers than any other driver; and more.

In particular, this latest version lets you adjust the screen frequency and angle of gray tints and halftone screens. That means sharper, more distinct grays on both laser printers and imagesetters. Another bonus: Micrografx claims the new driver is faster at printing text and bit maps and downloads fonts faster. Note: *Ventura for Windows* can't print EPS files with the driver; a problem Xerox may solve in the future.

Micrografx PostScript Driver v. 2.6 \$199.99; Micrografx, Inc., 1303 Arapaho, Richardson, TX 75081, 800/733-3729, 214/234-1769
Reader service no. 601

your body copy font, and auto-download the rest.

Quicker Print Files

Sometimes the easiest way to convert data to ASCII format or move it over a LAN is to create a "print file." Doing this in *Windows* is a snap—open the Control Panel, double-click the Printers icon, select a printer, click *Configure*, select FILE as the "port" *Windows* prints to, and confirm your choice. In your application, select the printer you've just attached to FILE, supply a file name (such as PRINTME.PRN), and the data is printed to disk.

If you don't need copies of individual print files, you can have WIN.INI sup-

ply the print file name automatically. Locate the [ports] section in WIN.INI; add a line in the format *filename-.PRN=*, like PRINTME.PRN=. Save WIN.INI and restart *Windows*.

Now go back to the Control Panel. First select a printer and then pick PRINTME.PRN in the Ports list box, confirm the choice, and return to your application. Now every time you print to this new "port," you won't have to supply a file name; and *Windows* will overwrite the print file with the new data each time you use this option.

Instant WIN.INI Changes

Most manual modifications to WIN.INI don't take effect until you exit and re-

load *Windows*. But if you open the Control Panel, double-click any icon, and then click *OK* (not *Cancel*), changes made in the [ports], [extensions], and printer-specific sections of WIN.INI (such as [PostScript.LPT1]) become active instantly.

If you don't feel like dragging over to the Control Panel, don't sweat it. Some programs, like *Corel Draw*, let you access the Control Panel directly. Generally, the trick also works if you select the Printer Setup, Target Printer, or Print option in an application, and click *OK*. In some cases, you may also have to close and reopen the current file—but it still beats restarting *Windows*.

Need help with Windows 3.0? Looking for that perfect utility? Reach out—send your questions to Windows Workshop, PC World, 501 Second St. #600, San Francisco, CA 94107-1431; CompuServe 74055,412; or MCI Mail PC World Editorial; 415/442-1891 (fax). ●

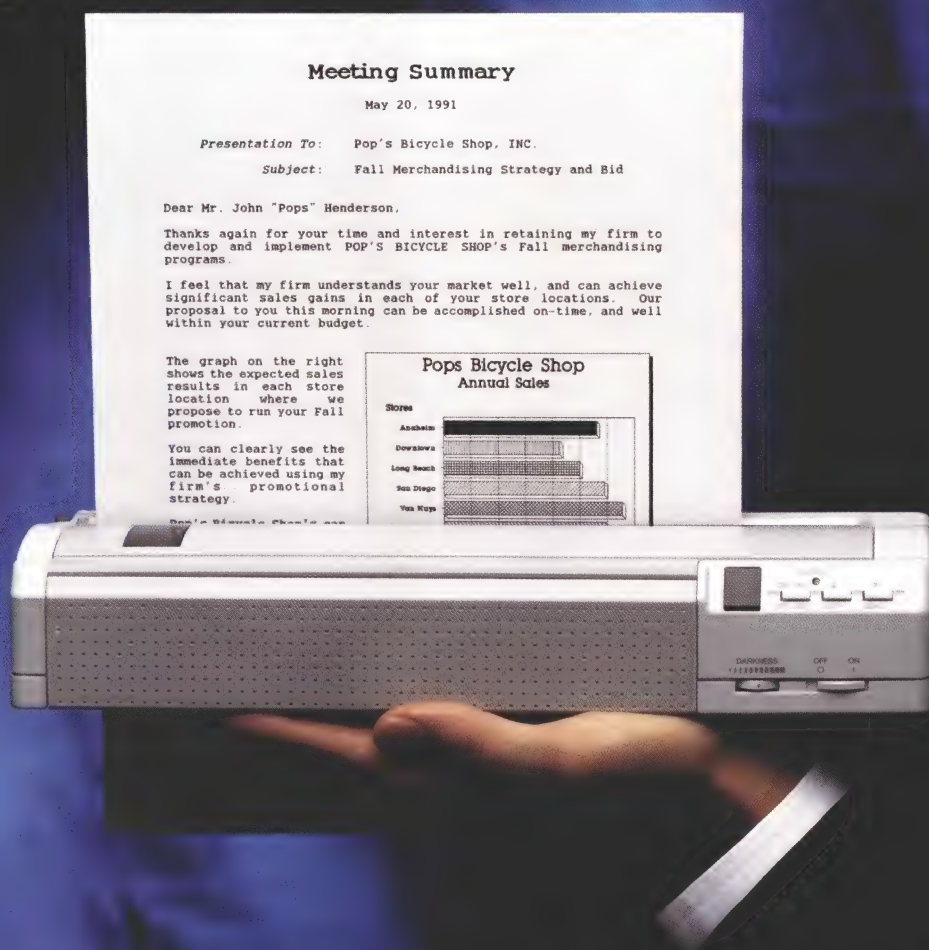
Jesse Berst is a contributing editor for PC World. He and Scott Dunn are coauthors of 101 Windows Tips (Peachpit Press, Berkeley, California, 1991).

POWER TIP NO. 209**Precise Mouseless Moves With Publish It**

Publish It is one desktop publishing package that doesn't require a mouse. You can move the pointer, although not precisely, by pressing the cursor keys alone. But if you hold down the <Shift> key at the same time, you can move the pointer pixel by pixel and achieve mouselike precision.

*Frank C. Yang
 Elmhurst, New York*

Introducing the World's Smallest Laser-Quality Printer Designed Especially for Laptops



's here. The world's smallest laser-quality printer designed especially for the laptop revolution. Weighing in at an amazing 2 pounds, this mini marvel brings new meaning to the word portable. Designed to work with any IBM-compatible laptop or notebook computer, the PN48 complements both, giving you the consummate portable office. Whether you demand laser-quality hard copy on the spot or require a proofing tool when you're on the go, the PN48 Notebook Printer is the one for you. Able to print on a variety of media,

anything from letterhead to transparencies, the PN48 is an essential addition to any business. Its rechargeable NiCd battery pack provides up to twenty-five laser-quality pages of portable printing power without recharging. With accessories that include an AC adapter/recharger, single and multiple strike cartridges and a soft carrying case, the PN48 Notebook Printer is a must have for anyone who's serious about portable computing. For further information call us at (556-1234 ext. 34.

 **CITIZEN**

Circle 91 on reader service card

Outscanning in its field. 800 dpi, and more.

Our new 8000/CLX 800 dpi flatbed scanner tops anything else out there in every way but price. In addition to high resolution, you get the added value of the industry's most sophisticated enhancements. And you can get it all in a sleek, quiet, easy-to-operate machine for the PC, PS/2*, and Macintosh*.

Or, if you're looking for a hand-held scanner, our new AVR 1000 scans a full 8½" wide, and comes with a 10-sheet document feeder for hands-free operation.

And any AVR model you choose — 400, 600 and 800 dpi, black & white, 8-bit gray-scale (field upgradable to color) and 24-bit color — comes with our exclusive ScanPack™ bundle: top image editing software (like Photoshop™ or Picture Publisher™); image sharpeners; our EasyScan™ utility so you can scan from within any application. And for Macintosh, a hardware accelerator option and JPEG data compression up to 80:1.

Plus, emulation of both HP Scanjet® Plus and Apple® scanners so you can use more application software. In fact, nearly *any* application software.

To find out more about our new AVR 8000/CLX, AVR 1000, and AVR's complete line of affordable scanners, ask your reseller or call 800-54-IMAGE or 408-434-1115.



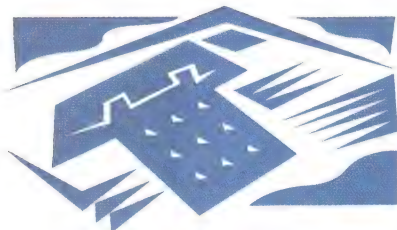
Advanced Vision Research, Inc.

© 1991, Advanced Vision Research, Inc. EasyScan and ScanPack are trademarks of Advanced Vision Research, Inc. Other TMs or ®s are trademarks or registered trademarks of their respective holders. All specifications subject to change without notice.



Circle 11 on reader service card

The Information Edge



Communications

On-line resources for business and professional users

This month: Find out how Delphi stacks up against CompuServe and GENie, and tap into the world's biggest medical data base with PaperChase.

Judy Heim

Most of the big on-line services have Fortune 500 backers. CompuServe Information Service (CIS), for instance, is backed by H & R Block, and GENie has General Electric. Delphi has no deep-pockets patron, just a small staff and a persevering spirit. Sure, Delphi is a bit underpowered compared with the big guns—there are only 27 forums—but low prices and slick menus make it worthwhile for business users in search of low-cost on-line information, especially travel info. For a free demo, dial 800/365-4636, type **JOINDELPHI** at the prompt, and use the password **PCSPECIAL**.

Q. *I've heard Delphi is a lot easier to use than either CIS or GENie. Is this true?*

A. Absolutely. Its straightforward menus are perfect even for novices, and the service is laid out logically. You can't get lost.

Q. *How do Delphi's prices compare with CIS's and GENie's?*

A. Delphi is a bargain—especially during prime business hours. The first 20 hours every month cost only \$1 each, day or night. After that, it's \$1.20 an hour. (If you use Tymnet, add \$9 an hour during the day; evening access is free.) In comparison, CIS runs \$12.80 an hour day or night plus \$2 per month. Daytime access to GENie costs \$18 an hour plus \$4.95 a month; at night some services are available with no hourly fee.

Q. *My business already takes up more time than I have. Why should I squeeze in Delphi?*

A. With Delphi you get access to two essential business sources: the UPI news wire and USA Today News Briefs—and you get both news services without surcharges. In addition, you can use two encyclopedias—Grolier's, and Delphi's own Kussmaul. Grolier's costs a nominal \$1 surcharge per session; ac-

cess to Kussmaul is free.

Also, Delphi offers more services for business travelers than CIS and GENie do. For example, Bargain Finders International lets you search for current airline bargains. And, you can work with numerous on-line travel agencies to rent cars and limousines and reserve plane seats, hotel rooms, restaurant tables, even theater tickets. Enter the name of a city or country in MetroLine or WorldLine, and get the lowdown on local customs and happenings. Or check State Department Travel Advisories for the latest scoop on danger spots abroad.

Delphi offers the familiar Online Airline Guide too, but the bargain stops there. OAG costs \$46.40 an hour during the day (including Delphi's \$1 hourly charge). CompuServe offers the same service for a lot less during the day, and GENie is cheapest at night.

Q. *I'm an investor. Is there anything for me on Delphi?*

A. Stock quotes are available, with a 15-minute delay, for only 7 cents each. Commodity quotes cost 5 cents each. That's a good deal for daytime stock watchers, or those who need only a few quotes, but investors with sizable port-

ON-LINE SHORTCUT

When Not to Use ZMODEM

ZMODEM is the fastest error-checking protocol around when conditions are normal, but excessive line noise can make it slower than good ketchup. If a noisy line starts polluting a file transfer, ZMODEM's speed may drop

from hundreds of characters per second to a 50-cps creep. If that happens, abort the transfer and start it again with YMODEM, which does a better job at handling extremely noisy lines.

THE PROFESSIONAL EDGE

PaperChase Tames the Medical On-Line Lion

Ron Chusid

Medline, the world's foremost medical data base, is an indispensable tool for doctors and many others in the health care field. It holds abstracts and references for more than 6 million articles published in the United States and abroad. Unfortunately, navigating Medline can be as tortuous as learning Latin.

Happily, there's a better way. Doctors at Boston's Beth Israel Hospital have developed PaperChase, an innovative, menu-driven service to help physicians tap Medline without first earning a librarian's degree. PaperChase also provides access to an additional 540,000 articles in the National Library of Medicine's Health Planning and Administration data base.

Best of all, PaperChase is relatively cheap. Accessed directly through Beth Israel Hospital, it costs only \$23 an hour (\$22 at night), plus 10 cents per reference. It's also available on CompuServe and several other services at \$44/hour and up, but without reference charges. Accessing Medline directly, without PaperChase, gets you tangled in a complicated pricing structure as well as a brutal user interface, but it seems to cost about half what PaperChase does.

Suppose you want to use PaperChase to search for information on President Bush's illness earlier this year. Begin by typing **atrial fibrillation** at the 'Look

For' prompt, and specify where to look: article titles, subheadings, or author's name. Unfortunately, there's no way to search full text. PaperChase then lists titles for all matches it finds. For 'atrial fibrillation' it locates about 5000 references.

To narrow that list, type **hyperthyroidism**—the cause of Bush's atrial fibrillation—and run a new search that combines the two terms. This produces a list of 145 references, and you can prune this list further by focusing on particular journals or certain years. All the while, PaperChase offers related subject headings and suggests ways to limit the search. On-line help is always available.

Once the search is complete, PaperChase displays a list of article references, about half of which are linked to abstracts. You can read the abstract on screen or have PaperChase send you the full text by mail (\$9) or fax (\$20). PaperChase offers many conveniences, including storing customized search criteria and resuming downloads where you left off if line noise interferes.

Medline is fine, but PaperChase is quicker. Its ease of operation and cost-efficient price make it one of the best deals going in the health care world.

PaperChase 350 Longwood Ave., Boston, MA 02115; 800/722-2075, 617/278-3900, 617/277-9792 (fax)
Reader service no. 603

folios may do better on GENie, which offers unlimited quotes at night for the standard \$4.95 monthly fee.

But Delphi's investment features don't stop there. For an additional \$1.25 per session, you can access daily market reports on everything from treasury bonds to livestock. Data on money market funds and CD rates can be downloaded with only minimal surcharges: \$1.25 per session and \$1 per report, respectively. A registry of public corporations is also available on line with no surcharge.

Q. *I'm interested mainly in downloading files. Does Delphi make sense for me?*

A. Although it's cheaper and much easier to download software from Delphi than it is from CIS or GENie, Delphi's file collection is a lot smaller. The bigger services offer upward of 60,000 files each, while Delphi's library comprises a mere 10,000 titles. And new uploads are likely to appear first on either CIS or GENie.

Q. *Does Delphi offer electronic mail?*

A. Yes indeed, and the interface is a lot easier to use than on CIS or GENie. As with those services, you can attach binary files to your messages using all the major protocols like ZMODEM and YMODEM. And you can send telex and fax messages, although fax costs considerably more than the equivalent on CIS or GENie. ●

Judy Heim is a contributing editor for PC World. Ron Chusid is chair of the Department of Medicine at Muskegon General Hospital in Muskegon Heights, Michigan.

WHERE TO BUY

Delphi

General Videotex Corp.
3 Blackstone St.
Cambridge, MA 02139
800/695-4005, 617/491-3393
Reader service no. 602

User Group Tips

Helpful hints from members of the nation's user groups

Run Multiple Ami Pro Macros

Ami Pro can run a macro automatically when you start the program. But if you need to run two or more every time, it's a pain to have to select them manually. Fortunately, one macro can call as many macros as you want. Just open a new file, and enter **FUNCTION autoexec()** on the first line. On the next line, type the macro programming statement **CALL** followed by a space, then the drive, path, and file name of the first macro you want run automatically, then **!**, and finally the name of that macro's function followed by **()**; for example, **CALL c:\amipro\macros\envelope.smm!env1()**. Press **<Enter>**, and continue adding **CALL** statements (each on a separate line) for the other macros you want *Ami Pro* to run automatically at start-up. Finally, type **END function** on its own line, and save the file as **AUTOEXEC.SMM** in the macro directory **\AMIPRO\MACROS**. *Ami Pro* recognizes the **SMM** extension and checks the syntax on its programming instructions, but you'll have to make sure you spell your macro and function names accurately.

Rodger Schuester

East Bay Chapter CPA Computer Users Group

Walnut Creek, California

Corel Draw Expands Your Selection of PostScript Fonts

Corel Draw is great for creating splashy headlines, which you can export for use in *Ventura Publisher* and other PostScript-capable applications. But don't limit yourself to the selection of fonts resident on your printer—you can use

any typeface in *Corel Draw*'s font library. When you export, just deselect 'All fonts resident' in the Export dialog box. Then *Corel Draw* automatically exports the headline as a graphic, retaining the letters as individual shapes with all the special effects, gray scales, or colors you've added. You'll be able to print on any PostScript printer without worrying about matching resident fonts.

Mike Buxbaum

Long Island Computer Association

Saving Wisely With PageMaker

PageMaker has three ways to save—two of them are optional, one is automatic. The most familiar are **Save** and **Save As**, the saving choices you make before or after significant changes. But every time you copy, print, use the clipboard, click on a page icon, insert or delete a page of your document, or change your page setup, *PageMaker* automatically makes a quick, transparent minisave of your publication. This feature stores a more up-to-date version than your last manual save. And you have a fail-safe if the power goes out, even if you've never saved the file or named it. Your last minisave will be a file with a **TMP** extension. Under ordinary working circumstances, you can undo to the last minisave by holding down **<Shift>** as you select *Revert* from the File menu. Or you can go a step further and bring back your last full save by just selecting *Revert*. You can return to the full save after going to the minisave but not vice versa.

Because both the minisave and the **Save** add changes to the original file, they execute faster than **Save As**, which does a total rewrite of the file. If you don't mind slower working saves, *PageMaker 4.0* lets you select **Save As** for default setting. But avoid leaving oversized files on your disk. **Save** your pub-

lication as itself at the end of each work session.

Howard Wexler

Westchester PC Users Group

Making Time With an Older Version of DOS

You have always felt comfortable with your **DOS 3.2** or earlier and never felt a need to upgrade. So what if it's showing signs of age? You stopped counting gray hairs a long time ago. But now you decide to impress your boss by having the data base generate invoices with automatic time stamps. Uh-oh! Your system clock is set to standard time, and it's daylight saving time. Good thing you caught it, but it's no big deal—you go to the **DOS** prompt, type **time**, press **<Enter>**, and then enter the correct time. For a while, everything works fine—your system time-stamps every invoice perfectly. But when you turn your computer on the next day, there's that same incorrect time! The **TIME** and **DATE** functions in **DOS** versions **3.2** and earlier are capable of only temporary changes to the battery-backed **CMOS** clock your system reads when turned on. You can run your system's setup program to reset the **CMOS** clock as well as the system clock, or upgrade your **DOS**—the **TIME** and **DATE** commands in versions **3.3** and later reset both clocks.

Dan Rocha

San Francisco PC Users Group

Are you a user group member with a tip to share? Send it to User Group Tips, PC World, 501 Second St. #600, San Francisco, CA 94107; Compu-Serve 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax)—include your phone number and the name of your group. We pay \$50 and throw in a PC World T-shirt for each tip we use—and you get to see your name in PC World. ●

The Complete System Upgrade.

Microsoft MS-DOS 5 Upgrade
Operating System Upgrade

CENTRAL POINT PC TOOLS
Essential Utilities for the PC Professional

NEW VERSION 7
Includes Backup and Uninstall for WINDOWS

- > Hard Disk Backup
- > Data Recovery
- > Hard Disk Diagnostics and Repair
- > DOS Shell and File Manager
- > Virus Protection
- > Remote Access and File Transfer
- > Disk Optimization
- > Disk Cache
- > Application Menu System
- > System and Network Information
- > Low-level Reformatter and Disk Maintenance
- > Telecommunications and Fax Support
- > Locate with Viewers
- > Top Manager with Workgroup Scheduler

SAVE \$80

Only \$99 with purchase of MS-DOS 5!
Ask your dealer for details.

AWARD-WINNING UTILITIES FROM:
Central Point Software, Inc.

No PC should be without DOS 5.0. And no DOS 5.0 user should be without new Central Point PC Tools™ 7.0.

Only PC Tools 7.0 builds upon the data recovery actually in DOS 5.0. We know. We wrote it.

It's so good Brad Silverberg, Microsoft's VP in charge of DOS 5.0 said, "We chose PC Tools because it's the best technology on the market." (10/90)

Now PC Tools gives you even more. Like data recovery for networks. Automatic utilization of DOS 5.0's high memory. Virus detection. Award-winning remote software. Real Windows applications for Backup and

Undelete that are data and keystroke compatible with their DOS 5.0 counterparts. And the only DOS shell with a Microsoft-licensed visual display.

For a limited time, when you buy DOS 5.0, you can get PC Tools 7.0 for only \$99. That's \$80 off of the retail price of \$179.

So call 1-800-445-4346 today for the name of your nearest Central Point dealer. And upgrade your upgrade.

Central Point Software[®] INC
Making Computing Safer, Simpler, Faster.

Central Point PC Tools is a trademark of Central Point Software, Inc. Names of other products mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Circle 52 on reader service card



STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Kill the dreaded Midnight Bug, automate LAN security, master the art of boxing with WordPerfect, learn when you don't need *.* , and program for Windows, visually.

Edited by Brett Glass

Squashing the Midnight Bug

The IBM PC has suffered for years from the "midnight bug," which can cause the machine's calendar to fall behind if it's left on and not used for more than 24 hours. To get around this problem, I wrote a RAM-resident program that maintains the correct date.

To assemble the program, type the hex code in **LISTING 1** into an ASCII text file named **FIXDATE.DAT**. Double-check your typed code—it's easy to make mistakes when typing hex. To create the program file **FIXDATE.COM**, make sure you're in the same directory as **FIXDATE.DAT**, and that **DEBUG.COM** is on your path. Then enter

the command **debug < fixdate.dat** at the DOS prompt.

Once **FIXDATE.COM** is created, put it in your **AUTOEXEC.BAT** file to keep your PC's calendar up to date.

*Irwin Cohen
New York*

Editor's note: This program solves a problem that has plagued users since the original IBM PC was released. The PC's BIOS sets a yes/no flag—called the "midnight flag"—each time midnight passes. When DOS calls the BIOS to check the time, it receives notice that the midnight flag was raised and updates its calendar. The BIOS automatically clears the flag after the request.

The problem occurs if the computer

has been completely idle while two or more midnights have passed. The next time the computer is used, DOS checks the flag, but only receives notice that the flag was raised; it has no idea that it was raised more than once. Hence, it advances the calendar by only one day, and is then a day or more behind.

A different series of events can cause DOS to miss advancing its calendar. If another program calls the BIOS for the time before DOS does, the flag will be lowered and DOS will never notice that midnight has passed.

FIXDATE.COM solves this problem by lurking in the background, waiting for midnight to pass. At midnight, the program instantly calls DOS to check (continues)

```
N FIXDATE.COM
E100 E9 C1 01
F103 214 0
E215 50 1E 52 51 2E A1 0F 01 3D 00 00
E220 75 49 2E C7 06 0F 01 01 00 B8 40 00 8E D8 80 3E
E230 70 00 00 74 2F 57 06 2E C4 3E 08 01 26 80 3D 00
E240 07 5F 75 20 2E 8C 16 11 01 2E 89 26 13 01 8C C8
E250 8E D0 8D 26 15 02 B4 2A CD 21 2E 8E 16 11 01 2E
E260 8B 26 13 01 2E C7 06 0F 01 00 00 59 5A 1F 58 2E
E270 FF 2E 03 01 50 1E 52 51 2E A1 0F 01 3D 00 00 75
E280 3A 2E C7 06 0F 01 01 00 B8 40 00 8E D8 80 3E 70
E290 00 00 74 20 2E 8C 16 11 01 2E 89 26 13 01 8C C8
E2A0 8E D0 8D 26 15 02 B4 2A CD 21 2E 8E 16 11 01 2E
E2B0 8B 26 13 01 2E C7 06 0F 01 00 00 59 5A 1F 58 2E
E2C0 FF 2E 07 01 0E 1F 8D 16 14 03 B4 09 CD 21 B4 34
E2D0 CD 21 2E 89 1E 08 01 2E 8C 06 0D 01 B8 1C 35 CD
E2E0 21 2E 89 1E 03 01 2E 8C 06 05 01 BA 15 02 0E 1F
E2F0 B8 1C 25 CD 21 B8 28 35 CD 21 2E 89 1E 07 01 2E
E300 8C 06 09 01 BA 74 02 0E 1F B8 28 25 CD 21 8D 16
E310 C4 02 CD 27 46 69 78 64 61 74 65 20 34 2E 31 2C
E320 20 28 43 29 20 31 39 39 31 20 49 2E 20 43 6F 68
E330 65 6E 0A 0D 24
RCX
235
W
Q
```

LISTING 1: Run **FIXDATE.DAT** through **debug** to create **FIXDATE.COM**, a program that keeps your IBM PC's calendar from falling behind.

PC WORLD

Save Your Copies of PC WORLD

Now there's an easy way to keep copies of *PC World* readily available for future reference. *PC World's* sturdy and practical file cases are designed to keep your copies in top condition and at your fingertips. Each file case holds up to six valuable issues of *PC World*. Start organizing your reference library today for only \$7.95 for one file, \$14.95 for two files, or \$27.95 for four files (PA residents add 6% sales tax). Please add \$1 per case for shipping and handling. Enclose your check made payable to Jesse Jones Industries and send to:

Jesse Jones Industries
Dept PCW
499 East Erie Avenue
Philadelphia, PA 19134

Or call toll-free 7 days, 24 hours 1-800-972-5858. Charge orders (minimum \$15) accepted. Please note that delivery cannot be made to P.O. Boxes. Please allow 4-6 weeks for delivery.

PC WORLD

the time. To make sure no other program has an opportunity to sneak in, it's a good idea to make FIX-DATE.COM the last TSR you load in your AUTOEXEC file.

NetWare Security Audit

As a LAN administrator, I need to make sure my Novell NetWare network remains secure. To do so, I run AUDITLAN.BAT (see LISTING 2) every week-end to perform these security checks:

- Check for short or easy-to-guess passwords by running the Novell SECURITY program
- List EXE or COM files that have appeared in public directories in the last week, so I can keep an eye on new, unauthorized programs that may be viruses or Trojan horses

• Run the CHKDIR program on all directories with space restrictions, to make sure no one is running out of room

• Check the integrity of the hard disk volume with the CHKVOL utility

• Send a complete report to the network printer

To use AUDITLAN.BAT, call the batch file from the DOS prompt using the current date (e.g. 9-1-91) as a parameter. You must have supervisor privileges on the LAN for this batch file to run properly.

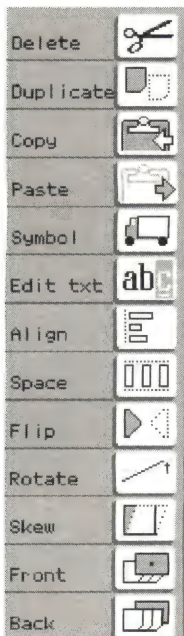
Rick R. Monnin

Arlington Heights, Illinois

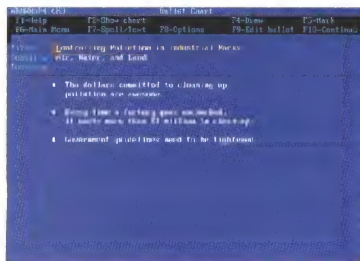
Editor's note: Every LAN administrator should run a batch file like this one at least once a week, although you will (continues)

```
@echo off
map i:=sys:
capture q=laser1
cls
echo working, please wait...
i:
cd \system
echo system security check report > prn
systemtime > prn
security > prn
cd ..
endcap
systemtime > prn
capture q=laser1
echo search for new .exe and .com files on sys: > prn
systemtime > prn
ndir all *.exe create aft %1 > prn
ndir all *.com create aft %1 > prn
endcap
capture q=laser1
systemtime > prn
echo sys: restricted directory size report > prn
i:
cd \dept91
chkdir > prn
cd \dept94
chkdir > prn
rem ** repeat for other directories of interest
cd \
endcap
capture q=laser1
systemtime > prn
chkvol * > prn
endcap
```

LISTING 2: Use this batch file to audit your NetWare LAN, passing it a date as a parameter. EXE and COM files created after that date will be flagged for examination.



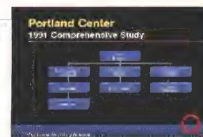
Drawing tools. 39 in all.



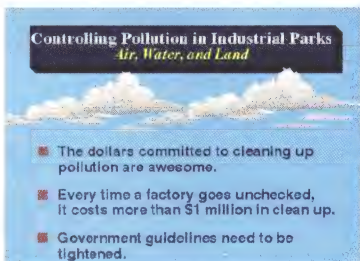
Do what you've always done before...



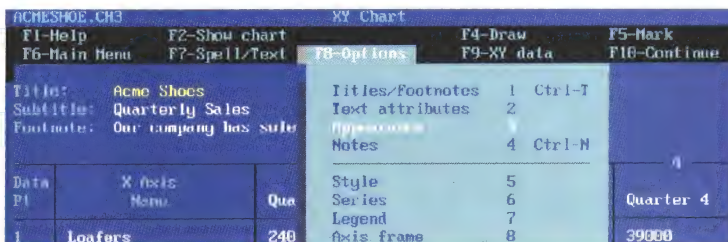
Twist it. Turn it.



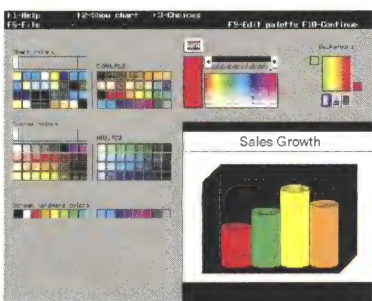
From titles to footnotes. From colors to logos. Our global options keep it consistent.



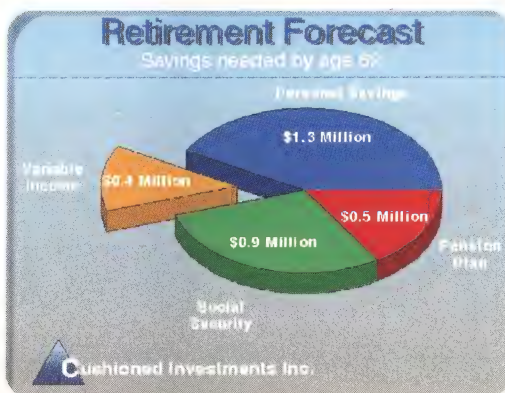
...style it like you've never seen before.



We heard you. Now you can view and select directly from your spreadsheet.

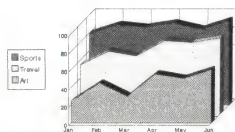


Choose from 32 color palettes. Then shade. Mix. Blend.



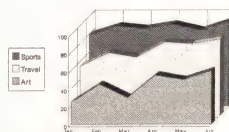
You enter the data, we'll make it look good. It's what you've known us for all along.

Coffee Table Books
Semi-Annual Sales



Source: Picture Book Magazine, Fall issue

Coffee Table Books
Semi-Annual Sales



Source: Picture Book Magazine, Fall issue

What you see is what you get.

Yes, we have WYSIWYG.

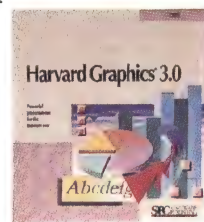


How do 16 million colors sound?

Overwhelming evidence that Harvard Graphics® 3.0 is more than just another upgrade.

Our new DOS upgrade is loaded with features. Call 1-800-336-8360, Operator 760, for your own demo disk. And view the evidence yourself.

SPC SOFTWARE PUBLISHING CORPORATION



For \$125, Harvard Graphics users can order 3.0 by calling 1-800-548-4772. Harvard Graphics 3.0 is a registered trademark of Software Publishing Corporation.
© 1991 Software Publishing Corporation, 1901 Landings Dr., Mountain View, CA 94039-7210.

PC WORLD

**TAKING CARE
OF BUSINESS**

THE PC WORLD SUBSCRIBER HOTLINE



Do you have a subscription problem that needs attention? Are you moving? Have an address change? Do you need to check your expiration date?

For the fastest service simply call our toll-free subscriber hotline: 1-800-234-3498 between the hours of 6 AM and 8 PM, Mountain Time.

Or if you prefer, write us at :

PC World Subscription Service
P.O. Box 55029
Boulder, CO 80322-5029

PC WORLD

want to change directory and print queue names to match your system. If your version of NetWare doesn't come with the SECURITY.EXE program, remove line 10 from the batch file.

Scanning for COM and EXE files with dates more recent than last week may not be sufficient to flush out viruses or Trojan horse programs; a "smart" virus or a human infiltrator can defeat this test by resetting the file's date. I recommend that you add a commercial virus scanner, such as McAfee's Netscan, to the weekly audit.

Boxing With WordPerfect

I often need to put a box border around each page in a WordPerfect document. You can put text inside a WordPerfect box, but if you do, you won't be able to use certain editing features—Center Page, for instance. Also, you must create a new box for each page.

A better approach is to make the box part of your document's header, so it appears automatically on every page. (continues)

POWER TIP NO. 210

Easy Moves Between WordPerfect Tables

Use delete and undelete as a simple way to move information between tables that have identical numbers of rows and columns. Press <Alt>-<F4> or <F12> to turn on block mode, highlight the information you want to move, and press <Backspace> to delete it. Move your cursor to the spot in the target table where you want to place the information. Press <F1> to undelete the block and complete your move.

Troy Wagstaff
WordPerfect
Orem, Utah

PC WORLD GIVES YOU A WINNING HAND!



Tired of flipping through user manuals?

Can't find the user manual?

Need lightning-quick access to key commands and features?

Need a software reference you can take anywhere?

PC WORLD'S NEW INSTANT REFERENCE CARD IS YOUR BEST BET.

This monthly pullout card gives you a full house of tips on using essential applications. One side provides basic commands that get you started; side two raises the stakes, with advanced pointers to help experienced users squeeze every bit of productivity out of their software and hardware investment.

LOOK FOR THESE INSTANT REFERENCE CARDS:

WordPerfect
Microsoft Word
Windows 3.0
Procomm Plus
Ventura Publisher
Paradox
Excel
PageMaker
1-2-3
DOS
CompuServe
...and more!

BASICS: WORD FOR WINDOWS

What to do: You can begin most *Word for Windows* tasks by clicking the left mouse button on a menu name and then on an option. Also, each selection has one letter underlined (bold here) that you can use to select it from the keyboard. You finish most tasks by clicking **OK** or pressing **<Enter>**.

USING MENUS

Task	Mouse	Keyboard
Open menu	Click on menu name	<Alt> or <F10> , type underlined letter in menu
Select option	Click on option	Type underlined letter in option
Another menu	Click on menu name	<Cursor Left> / <Cursor Right>
Close menu	Click off menu	<Esc>

GETTING STARTED

Create new document	File New
Open existing document	File Open or <Ctrl>-<F12> , select directory and name
Set margins	Format Document , type size, margins
Set default font	Format Character , select font, size, style
Set indents and spacing	Format Paragraph , type indents, spacing
Add columns	Format Section , type number of columns and spacing between

Adding a Table (continued)

Convert text to table	Select text, Insert Table , select separator
Add contents to table	Click on or <Tab> to cell, type or paste contents
Add cells to table	Select cell below or to right, Edit Table , choose Row or Column , Insert
Delete cells	Select cells, Edit Table Delete
Convert table to text	Select rows to convert, Insert Table , select separator

GETTING AROUND

The easiest way to get around is to click the mouse where you want to go. However, it is often quicker to use these keyboard shortcuts.

Move left/right a word	<Ctrl>-<Cursor Left> / <Ctrl>-<Cursor Right>
Go to beginning/end of line	<Home> / <End>
Go to top/bottom of window	<Ctrl>-<Page Up> / <Ctrl>-<Page Down>
Move up/down a paragraph	<Ctrl>-<Cursor Up> / <Ctrl>-<Cursor Down>
Move up/down a window	<Page Up> / <Page Down>
Go to beginning/end of document	<Ctrl>-<Home> / <Ctrl>-<End>
Go to page or bookmark	<F5> , type page number or type or select bookmark

Save document	File Save or <Shift>-<F12>
Save document with new name	File Save As or <F12> , type name
Print document	File Print or <Ctrl>-<Shift>-<F12> , select number of copies, other options
Close document	File Close or <Ctrl>-<F4>
Leave <i>Word for Windows</i>	File Exit or <Alt>-<F4>
Open Help index	Help Index or <F1>
Get context-sensitive help	<Shift>-<F1> and click on object

ADDING CONTENT

Adding Text

Enter text	Click on starting place, type text
Start a new paragraph	<Enter>
Begin a new line	<Shift>-<Enter>
Begin a new page	<Ctrl>-<Enter>
Toggle insert/overtyp	<Insert>
Add text from file	Insert File , select directory and name
Add text from clipboard	Edit Paste or <Shift>-<Insert>

Adding Graphics

You can add charts or illustrations from the Clipboard or from a TIFF file to your document. Graphics with Dynamic Data Exchange (DDE) support (such as *Excel* charts) can be linked to data files and automatically updated.

Add graphic from file	Insert Picture , select directory and name
Add graphic from Clipboard	Edit Paste or <Shift>-<Insert>
Add graphic from Clipboard with DDE link	Edit Paste Link , check Auto Update for automatic or uncheck it for manual updating
Add blank picture frame	Insert Picture , select New Picture
Size graphic	Select graphic, hold <Shift> and drag one of the corner or side handles
Crop graphic	Select graphic and drag one of the corner or side handles

Adding a Table

Create new table	Click at starting point, Insert Table , type number of columns and rows
------------------	--

SELECTING TEXT

Selecting From the Keyboard

You can select text, graphics, tables, paragraph breaks, page breaks, and other document elements simply by moving the cursor (the blinking, vertical bar, also called the insertion point or insertion pointer) to the beginning of the element, holding down **<Shift>**, and moving the cursor to the end of the element using the keystrokes described above in "Getting Around."

Select word or sentence or paragraph or section	Move within object, <F8> two or three or four or five times
Select column	Move to a corner, <Ctrl>-<Shift>-<F8> , move to opposite corner
Select whole document	<Ctrl>-<NumPad 5>

Selecting With the Mouse

Select contiguous elements	Move pointer to one end, press and hold mouse button, drag to other end
Select word (or words)	Double-click on word (and drag)
Select sentence	<Ctrl> -click on sentence
Select line	Click in left margin
Select paragraph	Double-click in left margin
Select column	Move to a corner, hold down right button, move to opposite corner
Select document	<Ctrl> -click in left margin

USING WINDOWS

Open new window on active document	Window New Window
Arrange document windows	Window Arrange All
Switch to a different document window	Window , choose document

ADVANCED: WORD FOR WINDOWS

CHANGING THE VIEW

You can turn various views and several screen objects on and off (loggling).

- View Draft
- View Page
- View Outline
- View Ribbon
- View Ruler
- View Status bar
- View Preferences, Horizontal or Vertical
- Scroll Bar

REARRANGING TEXT

You must select text before you edit it. You can use the icons in the Ribbon and the Ruler for some editing in addition to the commands below.

- Edit Copy or <Ctrl>-<Insert>
- Edit Cut or <Shift>-<Delete>
- Edit Paste or <Shift>-<Insert>
- Delete selection
- Delete next character (no selection)
- Delete previous character
- (no selection)
- Delete next word (no selection)

EDITING A DOCUMENT

FORMATTING TEXT (continued)

- Set line spacing
- Set paragraph specs
- Format Paragraph Line, type size
- Format Paragraph, select or type specs
- Format Tabs, type position, select
- Alignment and leader
- Format Define styles, type new style and name, set formatting
- Select styles

OUTLINING

With outlining you can plan and organize a new document, quickly reorganize an existing one, and format and number headings.

- Apply style *n* to heading, <Ctrl>-S, type heading *n*
- View Outline
- Move selection below next heading <Alt>-<Shift>-<Cursor Down>
- Move selection above previous heading <Alt>-<Shift>-<Cursor Up>
- heading
- Move heading to next lower level <Alt>-<Shift>-<Cursor Right>
- (demote)
- Move heading to next higher level <Alt>-<Shift>-<Cursor Left>
- (promote)
- Display headings to level *n* <Alt>-<Shift>-*n*

FORMATTING TEXT

- Center text
- Left-align text
- Right-align (right and left-align) text
- Justify (right and left-align) text
- Bold text
- Italic text
- Normal text
- Underline text continuously
- Underline selected text
- Double underline text

Undo last action

- Format Paragraph Center or <Ctrl>-C
- Format Paragraph Left or <Ctrl>-L
- Format Paragraph Right or <Ctrl>-R
- Format Paragraph Justify or <Ctrl>-J
- Format Character Bold or <Ctrl>-B
- Format Character Italic or <Ctrl>-I
- Format Character Normal or <Ctrl>-N
- Format Character Underline or <Ctrl>-U
- Format Character Word underline or <Ctrl>-W
- Format Character Double underline or <Ctrl>-D
- Format Character Small Caps or <Ctrl>-K
- Format Character Subscript or <Ctrl>-=
- Format Character Superscript or <Ctrl>-^
- Format Character Font or <Ctrl>-F
- Format Character Points or <Ctrl>-P
- <Ctrl>-P, select size

Sort by field

- options, type field number
- Sort column only, <Ctrl>-S, change options, select Column Only
- Undo or <Alt>-<Backspace>

Sort by paragraph

- change options
- Sort paragraphs to sort, <Ctrl>-S, change options
- Format Tabs, type position, select options
- Set tab stops

Repeat last search

- <Alt>-<Shift>-<F4>
- select options
- Repeat last operation
- Search for text or formatting

Replace text or formatting

- Edit Replace, type old text and new text, <Ctrl>-<Backspace>

Delete previous word

- Repeat last operation
- Search for text or formatting
- Repeat last search
- Set tab stops
- Sort by paragraph
- Sort by field
- Sort column only
- Undo last action

PROOFING

- Check spelling for document
- Check spelling of word
- Check definition of word
- Replace word with synonym
- Hyphenate automatically
- Add optional hyphen
- Add nonbreaking hyphen

USING MACROS

Word for Windows' Macro Recorder records and stores multiple commands for repeated use. The only mouse movements the Macro Recorder recognizes, however, are command selections.

- Record a macro
- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

USING MACROS

- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

USING MACROS

- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

USING MACROS

- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

USING MACROS

- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

USING MACROS

- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

USING MACROS

- Macro Record, type macro name, select options, type a description, select OK, do what you wish to record, Macro Stop Recorder
- Macro Run, select the macro
- Macro Assign to Key, select macro, press key combination, Assign OK
- Type the keys you assigned to the macro
- Run a macro from keys
- Edit a macro

Here's Your Chance To Reach The Other 70% Of The Windows Market.



Introducing PC WINDOWS Exposition and Conference, December 9-11, 1991, Moscone Center, San Francisco.

Chances are, you already draw volume buyers of Windows™ products at one of the existing Windows events. But what about the other 70% of the market?

PC WINDOWS is your opportunity to sell to the entire Windows market. All 100% of it.

You asked for it. And now it's here.

In a recent survey conducted by First Market Research of Austin, Texas, 8 of 10 companies said they'd like to see a "public-oriented show" for Windows products. Yet they still expressed a desire to attract big business customers as well.

PC WINDOWS gives you both. December 9 is an invitation-only day exclusively for MIS decision makers, software vendors and developers, resellers, consultants and other VIPs. And December 10 and 11 are open to the general public—small business users, professionals, educators, and home PC users.

Why not show and sell?

While other Windows expos let you show and tell, PC WINDOWS encourages you to show and sell—either directly or in partnership with your resellers. This event is designed to attract buyers, not shoppers.

Take advantage of this opportunity to sell to the other 70% of the Windows market—right at the height of the holiday shopping season. Exhibit at PC WINDOWS, December 9-11, 1991, at San Francisco's Moscone Center. It's the Windows show for everyone.

Need to know more about PC WINDOWS?

Complete this coupon and mail to: Glenn Gaudet, PC WINDOWS, World Expo Corporation, P.O. Box 9107, Framingham, MA 01701-9107. Or fax it to us at 1-508-872-8237. Can't wait? Call Glenn at 1-800-545-EXPO.

- ☐ I'd like to know more about *exhibiting* at PC WINDOWS.
- ☐ I'd like to know more about *attending* PC WINDOWS.

NAME _____

TITLE _____

ORGANIZATION _____

STREET _____

CITY/TOWN _____ STATE/PROVINCE _____

ZIP/POSTAL CODE _____ COUNTRY _____

TELEPHONE _____ FAX _____

PC WINDOWS is produced by World Expo Corp., producers of MACWORLD Expo and is sponsored by PC WORLD. Both are International Data Group (IDG) companies—the world's leader in information services on information technology. Windows is a trademark of Microsoft Corp.

WT1



PC WINDOWS
EXPOSITION & CONFERENCE

The Windows Show For Everyone

By turning off the Wrap Text Around Box option, you can make text that's a regular part of the document, which you have more control over, *appear* to be in the box. Assuming you want 1-inch text margins all around, here's how to create the proper header:

At the top of your document, press **<Shift>-<F8>**, then select *Page Margins*. Type **.833** and press **<Enter>** twice. Then select *Headers Header A Every page* to get to the header editing screen.

Before you create the box, define its options. Press **<Alt>-<F9>** and select *Text Box Options*. At the resulting Option screen, set all four Border Styles to *Single* (or whatever you prefer) and Gray Shading to **0**. Press **<Enter>** to return to the header editing screen.

Next, create the box itself. Press **<Alt>-<F9>** and select *Text Box Create*. At the resulting Definition screen, set the Anchor Type to *Page*, leaving the Number of Pages to Skip option at 0. Type **VS.667** and press **<Enter>** to set the

Vertical Position, **HS.8** and **<Enter>** to set the Horizontal Position, and **WN** to turn Wrap Text Around Box off. Press **<Enter>** to return to the header editing screen.

To exit the header editing screen, press <F7> twice. All the pages in your document will now be neatly boxed.

Miguel E. Gomez

Guatemala City, Guatemala

Editor's note: You may have to experiment to line up your boxes, text, and margins properly. Depending on your printer, WordPerfect's vertical spacing can get tricky.

You Don't Need *.*

This DOS tip may save you time when copying, renaming, or deleting files. When you want to DEL, ERASE, or COPY all the files in a directory, the name of the directory will suffice; you don't need to type `*.*`. The command `copy a:\c:\wp` is equivalent to `'copy a:\c:\wp *.*'`.

c:\wp', while **del a:\temp** is equivalent to 'del a:\temp*.*'.

Shane Devenshire

Walnut Creek, California

Editor's note: These commands are equivalent as long as there's a directory by the specified name. But be careful: If you have files in subdirectories with similar names, a typo in this command can erase those files.

Brett Glass is a contributing editor for PC World.

Have a macro, batch file, short program, or general tip you're proud of? Star-Dot-Star pays \$25 to \$200 per tip used. Send your tips to Star-Dot-Star, PC World, 501 Second St. #600, San Francisco, CA 94107; Compu-Serve 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). We cannot acknowledge submitted materials. ☺



Watch it! dollars are dis- four cents at a will make your unless you do so



Hundreds, even thousands of appearing from your company—time. The latest postal increase company *measurably poorer*—

Your best move? Get ArcList and from Group 1 Software to take advantage of discounts for ZIP+4® and Carrier Route even postal barcoding. You can also rid databases of costly duplicates, perform standardization, send personalized letters, and more. Installation is easy on your IBM-compatible PC (with 640K and hard



AccuMail
of postal
coding—
your
address

What's 4¢ to a big company like yours?

disk)—there's even a LAN version available.

If you're feeling pinched by the latest postal increase, call Group 1 Software for the dealer nearest you.



1-800-368-5806

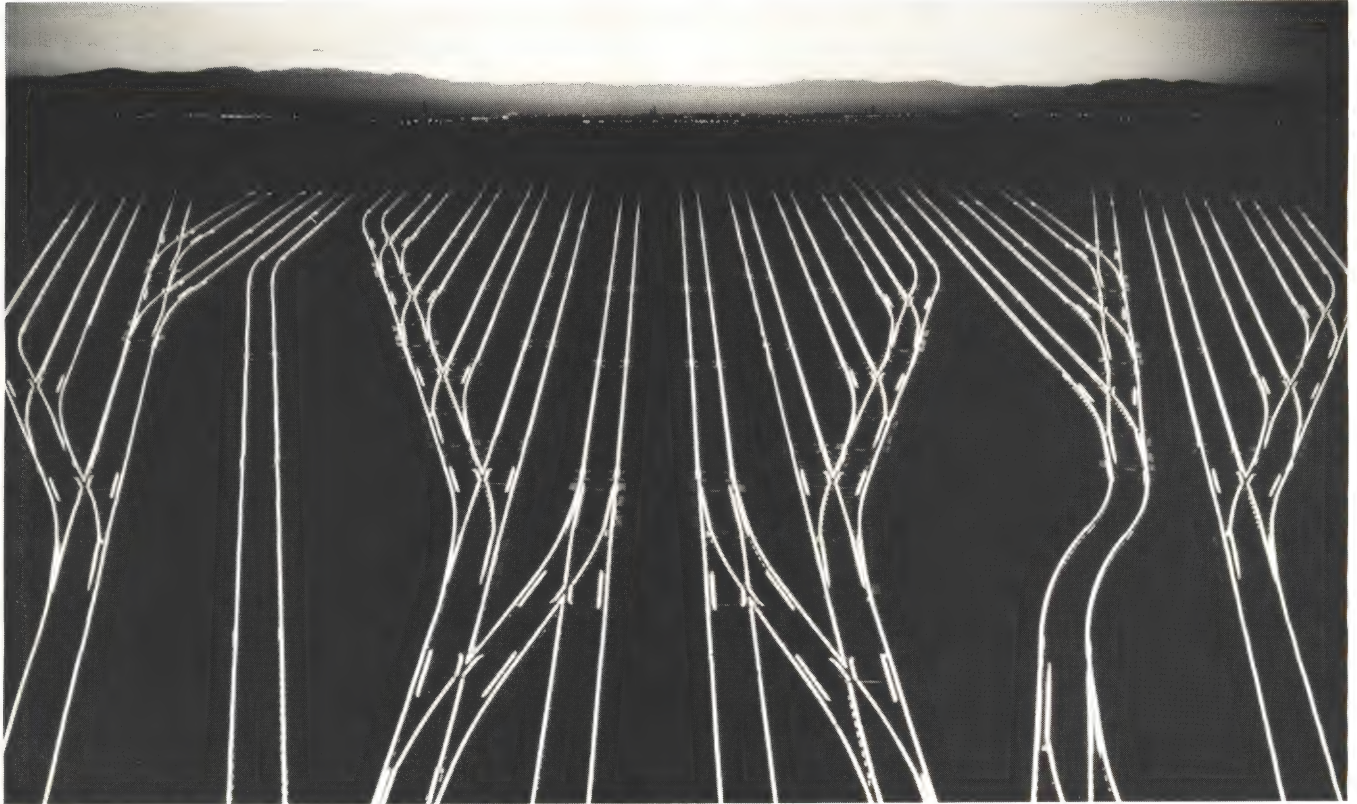
GROUP 1
GROUP 1 SOFTWARE

6404 Ivy Lane, Suite 500, Dept. P-PW71
Greenbelt, Maryland 20770-1400

ZIP+4® CODING • POSTNET® BARCODING • PRESORTING • DUPLICATE ELIMINATION

ZIP+4® and POSTNET® are registered trademarks of the U.S. Postal Service. All others are registered trademarks of Group 1 Software, Inc. ©1990 Group 1 Software, Inc.

Need to make technology decisions? Let Datapro put you on the right track.



Technology decisions. The choices are many. And each one determines where you and your company can go in the future.

Whether you're planning, marketing or purchasing technology, you need a source of technology product information that can get you on the right track... and keep you there. That source is Datapro.

Datapro provides information solutions that are:

- **Comprehensive**—We offer a complete range of information services.
- **Accurate**—Our data is dynamically updated from more than 100,000 sources as changes occur.
- **Timely**—Our tiered delivery system gives you essential information when it happens, more in-depth information when it becomes available.
- **Convenient**—You can obtain our information in a range of easy-to-follow, immediately usable formats on a variety of media.

So call 1-800-DATAPRO to find out more about how we can help you get on—and stay on—the right track.

DATAPRO

Information Services
Group
600 Delran Parkway
Delran, New Jersey 08075

**Your
information source
for better business
decisions.**

Circle 194 on reader service card

MEMORY!



FIRST SOURCE INTERNATIONAL, INC.

"The Only Source for Computer Memory!"

WE ACCEPT INTERNATIONAL ORDERS AND PURCHASE ORDERS!
3 DAY INTERNATIONAL DELIVERY VIA FEDERAL EXPRESS, UPS, OR DHL!



YOUR CHOICE OF QUALITY MEMORY PRODUCTS MANUFACTURED BY: KINGSTON, PARAGON, AND APRICORN.

- ALL USER INSTALLABLE
- SUPERIOR SERVICE
- FREE TECHNICAL SUPPORT
- QUALITY PRODUCTS
- UNLIMITED SELECTION
- FLEXIBLE PAYMENT OPTIONS
- GREAT PRICES
- EXCEPTIONAL WARRANTY

FAX: 714-588-9872 or CALL: 714-588-9866

IBM MEMORY

PS/1	512K Kit	1057035	\$59.00
	2MB	IBM PN N/A	\$189.00
PS/2 30-286, Exp. Board 1497259	512K Kit	30F5348	\$39.00
	2MB Kit	30F5360	\$119.00
PS/2 70-E61/121,50Z,555X,655X	1MB	6450603	\$69.00
	2MB	6450604	\$129.00
PS/2 70-A21	2MB	6450608	\$139.00
PS/2 555X/LS, 655X/LS, 34F3077 & 34F3011	4MB	34F2933	\$299.00
PS/2 80-141	1MB	6450375	\$89.00
PS/2 80-111/311	2MB	6450379	\$139.00
PS/2 80-A21/A31	4MB	6451060	\$269.00
PS/2 90, 95 and P75	2MB	6450902	\$179.00
	4MB	6450128	\$369.00
Expansion boards for all models 50 and 60	2-8MB w/2M	1497259	\$379.00
	2-16MB w/2M	6450609	\$439.00
Expansion boards for all models 70 and 80	2-14MB w/2M	34F3077	\$389.00
	4-16MB w/4M	34F3011	\$499.00

COMPAQ MEMORY

DeskPro 286-E,386-20/20E/25	1MB	113131-001	\$99.00
	4MB	113132-001	\$289.00
DeskPro 386S/16	1MB	113646-001	\$99.00
	4MB	112534-001	\$299.00
DeskPro 286N, and 386N	OK Board	118700-001	\$109.00
DeskPro 286N, 386N, 386SX/20	1MB	118688-001	\$79.00
	4MB	118690-001	\$339.00
DeskPro 386N, 386SX/20	2MB	118689-001	\$139.00
DeskPro 386-33, 486-33 & SystemPro	2MB	115144-001	\$149.00
	8MB	116561-001	\$849.00
DeskPro 386-20e and 25e	1MB Board	113644-001	\$159.00
	4MB Board	113645-001	\$359.00
DeskPro 386S	1MB Board	113633-001	\$159.00
	4MB Board	113634-001	\$359.00
DeskPro 386/16	1MB Board	108069-001	\$249.00
	2MB Board	108069/71-001	\$329.00

LAPTOP MEMORY

Portable 386/20	1MB	\$189.00
	4MB	\$499.00
Portable LTE 286	4MB	\$119.00
	4MB	\$569.00
SLT-286	1MB	\$149.00
	4MB	\$579.00
SLT-386	1MB	\$139.00
	2MB	\$229.00
	4MB	\$499.00
TOSHIBA		
1000SE, XE, LE, 2000SX	1MB	\$139.00
	2MB	\$259.00
	4MB	\$539.00
1000LE, 2000SX	8MB	\$1079.00
T1200XE	2MB	\$165.00
T1600	2MB	\$165.00
T3100E	2MB	\$165.00
T3100SX	2MB	\$165.00
T3200SX	4MB	\$349.00
	2MB	\$165.00
	4MB	\$349.00

BRAND NEW!

IBM PS/2 140SX Laptop	2MB	\$289.00
	4MB	\$579.00
	8MB	\$1149.00
Hewlett-Packard LaserJet IIISI	1MB	\$89.00
	4MB	\$329.00
Compaq LTE386/20	1MB	\$249.00
	4MB	\$579.00
AT&T Safari NSX/20	2MB	\$649.00
	4MB	\$699.00
NEC UltraLife 286F	1MB	\$259.00
	4MB	\$699.00
Toshiba T3200SXC	2MB	\$179.00
	4MB	\$399.00

MEMORY DIAGNOSTIC SOFTWARE FREE WITH EVERY PURCHASE!!

PRINTER MEMORY

Hewlett Packard LaserJet IIP, III, IIP and IID	2MB	334758	\$139.00
	4MB	33477B	\$239.00
Hewlett Packard LaserJet II and IID	2MB	33444B	\$119.00
	4MB	33445B	\$229.00
IBM Laser 4019 and 4019e	2MB	1039137	\$159.00
	3.5MB	1038675	\$229.00
Canon LBP-8II, 8IIR, 8IIT	2MB	S63-1880	\$129.00
	4MB	PN N/A	\$229.00
Panasonic 4450, 4450I and 4420	2MB	KX-P441	\$159.00
	4MB	PN N/A	\$249.00
Toshiba Page Laser 6	2MB	LS6-NB0090	\$159.00
Okilaser 800 and 820	2MB	OKI PN N/A	\$229.00

Laser printer memory also available for:
Texas Inst. QMS Epson Canon
Apple Brother AT&T TEC
Konica Star Many others!!

SIMMS

IBM

4Mx9-80	\$239.00
1Mx9-10	\$45.00
1Mx9-80	\$48.00
1Mx9-70	\$50.00
256x9-10	\$13.00
256x9-80	\$15.00

DRAM

1MBX1

1MX1-10	\$4.99
1MX1-80	\$5.49
256KX1	
256KX1-10	\$1.80
256KX1-80	\$1.90

AST MEMORY

Premium 386C, 386/16	1MB Kit	500510-007	\$69.00
Premium 386C, 386/16, FASTRAM, FASTboard	4MB Kit	500510-008	\$219.00
Premium 386,386-20	1MB Kit	500510-003	\$89.00
	4MB Kit	500510-004	\$269.00
Premium WS/386SX, WS/286, Bravo 286,386SX	2MB Kit	500510-002	\$109.00
Premium 386SX,16,25,33,all 486 models	1MB	500718-002	\$69.00
Bravo 486/25	2MB	500718-004	\$179.00
Premium II 386SX/20, SX/16, Cupid 32 card	1MB	500780-003	\$79.00
	4MB	500780-004	\$399.00
Premium 386/33T, 486/25, Bravo 486/25	8MB	500780-001	\$779.00

HEWLETT-PACKARD MEMORY

Vectra Q5/16S & ES/12PC	2MB Kit	D1354A	\$109.00
Vectra Q5/16S and RS/20PC	1MB Kit	D1540A	\$69.00
	4MB Kit	D1542A	\$219.00
Vectra Q5/20PC, RS/25PC, 20C and 25C	1MB Kit	D1640A	\$69.00
	4MB Kit	D1642A	\$219.00
Vectra 486 PC	1MB Kit	D2150A	\$69.00
	4MB Kit	D2151A	\$339.00
Vectra 486PC and 386/25 PC	8MB Kit	D2152A	\$589.00
Vectra 386/25 PC	2MB Kit	D2381A	\$129.00

T3200SXC	2MB	\$165.00
	4MB	\$349.00
T3200	3MB	\$249.00
T5100	2MB	\$165.00
T5200,5200C,8500	2MB	\$165.00
	8MB	\$859.00

ZENITH

SlimsPort	1MB	\$199.00
Slims, SupersPort SX, 286E	2MB	\$219.00
Slims, SupersPort 286E	4MB	\$499.00
SupersPort 286, 286E	1MB Kit	\$129.00
SupersPort SX	2MB A or B	\$199.00

NEC

ProSpeed 286, 386SX/16	1MB	\$219.00
	4MB	\$569.00
ProSpeed SX/20	1MB	\$219.00
	4MB	\$529.00
ProSpeed 386	2MB	\$279.00
	8MB	\$1079.00
Powermate Portable SX	2MB	\$429.00
	8MB	\$1469.00

Many other brand name laptop and notebook memories available!

Panasonic	Sharp	Everex
Texas Inst.	Packard Bell	Sanyo
Leading Edge	Hewlett Packard	AST

ZENITH MEMORY

Zenith Z-386/20/25/33 & 33E	1MB	ZA36/3800ME	\$69.00
	4MB	ZA3800MK	\$339.00
Zenith Z-386/20/25 & 33	2MB	ZA3600MG	\$139.00
Zenith Z-386 SX and Z-386SX/20	2MB Kit	Z-605-1	\$119.00
Zenith TurboSport 386e	1MB	ZA-3034-ME	\$199.00
	4MB	PN N/A	\$569.00

EXPANSION BOARDS

Everex RAM 3000 Deluxe

Up to 3MB of base, expanded and/or extended memory. EMS 4.0 compatible with no wait states. Uses 256Kx1 Dram.

with 512K: \$139.00

BocaRam/AT Plus

Up to 8MB for any AT or 16 bit compatible machines running up to 33MHz. Offers all types of memory, provides a maximum of 8MB LIM/EMS 4.0. Uses 1x1 Dram or 1x9 SIMM modules.

2MB with DRAM's: \$219.00

2MB with SIMM's: \$239.00

NEC MEMORY

Powermate SX	2MB Brd.	APC-H855	\$569.00
	4-8MB Brd.	APC-H853	\$849.00
	8MB Brd.	NEC PN N/A	\$1429.00
Powermate SX Plus	1-2MB Brd.	APC-H850E	\$239.00
	2MB Brd.	NEC PN N/A	\$399.00
	4-8MB Brd.	APC-852E	\$669.00
Powermate SX/20	2MB CPU	OP-410-8101	\$239.00
	2MB CPU/OK	OP-410-8100	\$299.00
	2MB Brd.	OP-410-8102	\$239.00
	2MB Kit	OP-410-8103	\$179.00
Powermate 386/20	2MB Kit	APC-H655X	\$429.00
Powermate 386/25	2MB	APC-H655E	\$429.00
	8MB	APC-H656X	\$1329.00
	8MB Base	APC-H657X	\$1329.00
Powermate 386/25S	2MB Kit	OP-410-5201	\$239.00
	8MB Kit	OP-410-5202	\$759.00
Powermate 386/33E and 486/25E	2MB	OP-41-5101	\$299.00

TOLL FREE FROM ANYWHERE IN THE U.S. OR CANADA
ORDER NOW! 1-800-535-5892



WE ACCEPT VISA, MASTERCARD AND AMERICAN EXPRESS!

- No surcharge on Visa or Mastercard. AmEx add 4%.
- Terms: AMEX, Visa, Mastercard, C.O.D., P.O.'s.
- Return Policy: 20% Restocking fee on all non-defective returns and refused orders. All items must be returned within 15 days with original documentation and package. Return Merchandise Authorization # required.
- Manufacturers' part numbers are for your convenience, all products are third party. 100% compatible or full refund!
- Prices and availability subject to change.

INT'L 011-714-588-9866
U.S. 800-535-5892
FAX 714-588-9872

MAIL ORDERS TO:

FIRST SOURCE INT'L INC.
36 ARGONAUT, STE 140
ALISO VIEJO, CA 92656

FOLLOW YOUR PACKAGE EVERY STEP OF THE WAY!



FAST, INEXPENSIVE AND DEPENDABLE DELIVERY ANYWHERE IN THE WORLD! CHOOSE THE CARRIER TO FIT YOUR DELIVERY NEEDS AT LOW RATES. INFORMATION FOR TRACKING SHIPMENTS IS READILY AVAILABLE AT YOUR REQUEST!

DEVELOPER'S TOOLBOX

BASIC Visualization

Brett Glass

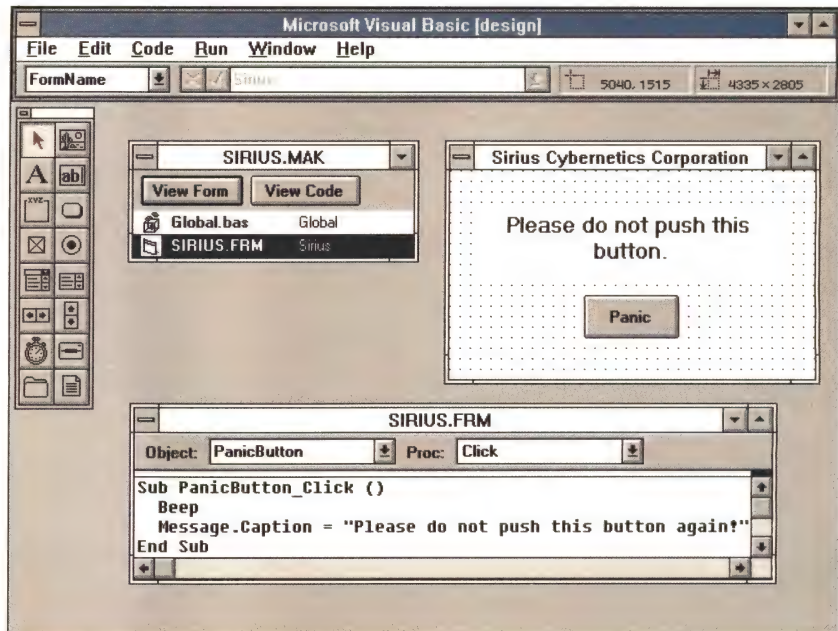
Professional programmers wouldn't want to create their magnum opus in Microsoft's new *Visual Basic*, but if you're a weekend programmer or you're building simple utilities, the environment is ideal. It's also a great introduction to *Windows* programming.

Creating an application in *Visual Basic* is easy. First, you design windows and dialog boxes in a draw program-like environment. Then, you attach snippets of BASIC code—to be triggered by such events as mouse clicks and keystrokes—to the buttons and other objects. This system lets you build programs incrementally, using the internal debugger to test one subroutine before you work on the next.

Visual Basic's dialect is a "modernized" BASIC with true functions, procedures, and advanced control structures. (You can use line numbers and GOTOs if you want, but you're not obliged to.) Nonetheless, if you're converting an existing BASIC program, expect to perform some *major surgery*. Such classic and often-used features as DEF FN functions and the DATA statement are absent. Not surprisingly, you'll need to change the way your programs handle input and output—the old INPUT and PRINT statements weren't designed for a windowing environment.

Visual Basic's on-line documentation is a sterling example of what a Help system should be. In fact, the printed documentation's index often refers you to the on-line help. Borrowing from *Turbo Pascal*, it provides instant help on any keyword in your code and lets you paste sample code into your program. The tutorial is also first-rate. After viewing it, I created a simple program in about 15 minutes without once cracking the manual.

Alas, *Visual Basic* doesn't have what



I created this simple "Panic Button" application (with apologies to Douglas Adams) in less than 15 minutes after completing the Visual Basic tutorial.

it takes to create a major application. For one thing, the compiled programs are large and slow. Although my 15-minute application compiled to less than 4K, it required a 270K run-time library module to execute. Furthermore, computation-intensive applications were noticeably slower than similar C or Pascal programs; and *Visual Basic*'s editing capabilities could be better. You can't view or edit more than one subroutine at a time, making it awkward to move or compare code.

Because it's easy to create a user interface in *Visual Basic*, you might want to use it for prototyping before writing an application in another language. But *Visual Basic* doesn't store your program's resources in a standard format, so you'll have to recreate your windows and dialog boxes with a utility such as the Resource Compiler or the *Whitewater Resource Toolkit*.

Visual Basic comes agonizingly close to being a real object-oriented language, but misses the mark by omitting

vital object-oriented programming (OOP) capabilities. You can bind methods to the existing user-interface objects, but there's no way to create new classes. If you want ten red buttons that beep when they're pushed, you'll have to color each one individually and group them to share the beeping code—much clumsier than creating a "red beeping button" class. Instead, I'd recommend Borland's *Turbo Pascal for Windows* if you want real OOP functionality.

If you're new to *Windows* programming, or need to write quick and simple utilities, you'll thank your lucky stars for *Visual Basic*. But if you're ready to write that major application, you'll find better tools elsewhere. ☹

WHERE TO BUY

Microsoft Visual Basic

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052-6399
800/426-9400
LIST PRICE: \$199
Reader service no. 675

CATALOG

Shop *The PC World Catalog* for fast solutions to your PC needs.

HARDWARE

■ Accessory Boards	277
■ Bios Chip	277
■ CD ROM	277
■ Communications/Modems	277-278
■ Computer/Systems	278
■ Disk Drives	278
■ Laptops	279
■ Peripherals	279
■ Tape Back-Ups	279

■ Health	286
■ Inventory Control/Management	286-287
■ Languages	287
■ Mailing Programs	287
■ Maintenance Management	287
■ Medical	287
■ Music	287
■ Networking	287
■ Public Domain/Shareware	287-288
■ Real Estate	288
■ Security	288
■ Sports	289
■ Statistics	289
■ Surveys	289
■ Time Management	289
■ Training	289
■ Utilities	289

MISCELLANEOUS

■ Accessories	280
■ Bar Coding	280-281
■ Books	281
■ Business Opportunities	281
■ Catalogs	281
■ Computer Insurance	282
■ Data/Disk Conversion	282
■ Data Recovery	282
■ Disk Copy Service	282
■ Disks	282
■ Security	282
■ Slides	283
■ Supplies	283

ADVERTISING SALES STAFF

Sandra Wade - *Catalog Manager*
Duane Hampson - *Eastern Account Manager*
Elizabeth Maffly - *Catalog Coordinating Manager*

ADVERTISING RATES & INFORMATION

The PC World Catalog serves as a cost-effective monthly meeting place for advertisers and volume purchasers. Our readers don't want to shop, they want to buy! And your message can reach them in two formats—display or text. Both are arranged by product category for easy reference.

Display ads are sold by the column-inch (2-inch minimum). You must supply camera-ready type and artwork. Standard red is available as a second color.

Text ads are sold at a minimum three-time rate of \$560 per issue for a total of \$1,680. You supply copy. We set type.

For further information regarding the *Catalog*, space closings and material deadlines, please call Toll-Free 800/435-7766. Within California, call 800/435-7760.

PC World
501 Second Street
San Francisco, CA 94107

 PCW Communications, Inc.
An IDG Communications Publication

SOFTWARE

■ Accounting	283-284
■ Business Applications	284
■ Church Applications	284
■ Construction	285
■ Database Publishing	285
■ Data Entry	285
■ Educational	285
■ Employment	285
■ Entertainment/Games	285-286
■ Financial	286
■ Flow Charting	286
■ Genealogy	286
■ Graphics	286

CATALOG

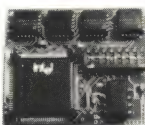
PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

HARDWARE/ Accessory Boards

**Convert your 286
To a powerful 386SX!**

**ONLY
\$199!**



Affordable! Slotless! The Evergreen 386 SuperChip II can convert your 286 IBM, Compaq, or AT compatible to a 386. Run Windows 3.0 in the enhanced 386 mode, utilize MS DOS 5.0's Loadhigh and Devicehigh programs. Speed up your processor (increase on an AST Premium 286 using Norton SI version 4.5 goes from 11.2 to 15.6!). Math accelerator board also available for your 287 Math Coprocessor.

1325 N.W. Ninth Street
Corvallis, OR 97330-4508
(503) 757-0934



1-800-733-0934
FAX: (503) 737-7350

CIRCLE 599 ON READER SERVICE CARD



**VOICE MAIL
CALL PROCESSING
TELEMARKETING**

Let Powerline transform your PC/XT/AT/386 into a multi-line voice processing command center. Have your computer intelligently process your sales, inquiries and messages. Complete package.

Single Line (Bignouth) . . . \$295.00
Multi-Line \$895.00

(Developer/OEM packages available)

VISA • MC • AMEX • COD

Call: (415) 522-3800

FAX: (415) 522-5556

TALKING TECHNOLOGY, INC.
1125 ATLANTIC AVENUE, ALAMEDA, CA 94501

CIRCLE 521 ON READER SERVICE CARD

ROM BIOS Upgrades

AMI & PHOENIX. Upgrade your IBM PC, XT, AT, or compatible, 386sx & 386 also. Supports 2 user defined hard drives, expanded hard drive tables 101/102 KB, 360,720, 1.2 & 1.44 floppies, Complete set-up In ROM, All Video, Windows 3.0.

*ROM diagnostics: AMI 286&386. Reasonable prices & full 30 day money-back Guarantee! Don't Settle For Less-Call us.

ADVANCED SOFTWARE
4 1/2 Marlboro Road Suite 2R
Derry, NH 03038
800-835-2467 603-432-1532

CD Rom

CD-ROM



Countries of the World

The full text of over 100 study books including business statistics, maps, flags, national anthems (sound), & more, the ultimate international reference! \$495

Pioneer Six Pack Bundle

Get 6 great discs: • U.S. History • Countries of the World • Birds of America • Sherlock Holmes • Shakespeare • Software Potpourri • Only \$389 6 Pack and Minichanger ALL FOR ONLY \$1489

CD-ROM BUNDLE

Get a CD-ROM Drive and any 5 of these discs: • Microsoft Bookshelf • U.S. History on CD-ROM • Illustrated Encyclopedia • CIA World Fact Book • Golden Immortal • Between Heaven & Hell II • Shakespeare • Sherlock Holmes • Software Potpourri/Bible ALL FOR ONLY \$597

CD-ROM Drives

NEC CDR-36, 73, or 83 newest models from 489 Chinon, Hitachi, Denon, Philips & Sony in-stock

CD-ROM Titles

Between Heaven & Hell II practical/perverse 99
McGraw-Hill Ref. set 100,000 terms 245
Grollier's Encyclopedia 20 vol. PC & Mac 289
U.S. History on CD-ROM 107 books & images 395
Speed Dial Entire U.S. Yellow Pages 399

MORE! Over 300 different titles
Money back guarantee Free tech support
GUARANTEED LOWEST PRICES

**Bureau of
Electronic Publishing, Inc.**
Dept. A • 141 New Road, Parsippany, NJ 07054
Fax # 201-808-2676

Call: 1-800-828-4766 orders only
201-808-2700 information

CIRCLE 540 ON READER SERVICE CARD

CD-ROM
1-800-843-9497

**Save over \$1400
on CD-ROM titles!**



**NEC Intersect
CDR-73 Bundle**
(AT/XT-300ms):
Buy the NEC

Intersect CDR-73 bundled with the 8 CD-ROM titles listed below for only \$950. Save \$1400! A retail value of \$2,366. #A1-1978, \$950

NEC Intersect CDR-36 Bundle
(AT/XT - 500ms) w/ the 8 CD-ROMs below. Save \$1300! #A1-1977, \$850

1 The Illustrated Encyclopedia

1000s of facts at your fingertips instantly!
Over 33,000 articles,
1,500 full color illustrations and
photos. 21 volumes.



2 The Reference Library

Access volumes of data and reference respected sources including *The New York Public Library Desk Reference*, *Webster's New World Dictionary™*, and more!



3 The World Atlas

"The World Atlas is the winner" *BYTE Magazine*. It's an almanac, world factbook, and atlas all in one.

Access over 240 reference, statistical, and topographical maps!

4 The Bible Library

9 Bibles and 20 reference works.

5 Shakespeare on Disc

Full text in American and Queen's English versions.

6 Sherlock Holmes

Complete text including *The Medical Casebook of Dr. Doyle*, linoleum block prints, and more.

7 Birds of America

The complete 1840 edition plates and text, as well as bird calls.

8 The Game Pack

Five spectacular games including the award-winning strategy game, *The Chessmaster 2000*. Also includes *Bruce Lee Lives*, *Beyond the Black Hole*, *Lin King/Cribbage King*, *Life & Death*.



EDUCORP
Computer Services

1-800-843-9497

Info: 619-536-9999 FAX: 619-536-2345

CIRCLE 414 ON READER SERVICE CARD

Communications/ Modems

COMPANION

**Add an Extra
Keyboard and Monitor to
your CPU up to 600 ft. away.**

- IBM PC, XT, AT, PS/2 and 100% Compatibles
- Available for MDA, CGA, EGA (TTL) and VGA (Analog) Monitors

- 25, 50, 100, 150, 200, 250 ft. lengths

- No external power required
- Lengths up to 600 ft. available by Special Order
- Multiple Monitor Configurations available
- Prices start at \$219.



CYBEX CORPORATION
2800 H. Bob Wallace Avenue
Huntsville, AL 35805
(205) 534-0011

CIRCLE 469 ON READER SERVICE CARD

AWARD BIOS ROM UPGRADES

Upgrade your IBM XT, AT or Compatible with a new AWARD BIOS ROM. Add high density floppies, 101 keyboards, etc.

Call for FREE Catalog.
KOMPUTERWERK

851 Parkview Blvd.
Pittsburgh, PA 15215
Orders (800) 423-3400
Tech. (412) 782-0384

CIRCLE 478 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Communications/ Modems



This 4½ Hour VHS
Video Tape Course –

“How To Install A NOVELL® Network”

Will teach you in plain English all the basics required to install a Novell Network. Topics include: Network Boards, Cabling, File Servers, Hard Drives, Disk & Diskless Workstations, Software Installation, Network Management, Multi-User Applications, etc.

For Orders Call 1-800-654-1138
Tech-support 818-905-1262
Introductory Price \$99⁹⁵ Plus \$5 Shipping & Handling

FAX 818-905-1292



Vogue Video Productions



16250 Ventura Blvd., #202, Encino, CA 91436

CIRCLE 513 ON READER SERVICE CARD

Disk Drives

BACKPACK. IT'S A DRIVE OF A DIFFERENT COLOR.



Add a diskette drive without horsing around inside your computer — just plug Backpack into your parallel port! Connect your printer to the Backpack drive. No tools. No hassles. No interface cards. Backpack works with IBM and compatibles including PCs, XTs, ATs, PS/2s, PS/1s, and laptops. It's available in 5.25"

and 3.5" and comes complete with everything you need. So don't horse around inside your computer, add an external drive the easy way—plug in a Backpack! Hard Disk models and tape backup available soon.



MicroSolutions
Computer Products

132 W. Lincoln Hwy., DeKalb, IL 60115
815-756-3411 Fax: 756-2928

CIRCLE 536 ON READER SERVICE CARD

Computer Systems

Tandy Computers

Nationwide Sales - Guaranteed Best Prices

The Canfield Company

1-800-633-0197

400 Pennsylvania
Holton, KS 66436

A Radio Shack® Dealer

1-913-364-2171
FAX 913-364-4311

CIRCLE 541 ON READER SERVICE CARD

COMPUTERS

BEST PRICE. BEST SERVICE. BEST QUALITY

386SX16 286-12
40MB VGA color 40MB VGA color
\$1275 \$995

NAME BRANDS FOR LESS Call For Items Not Listed

ALR	EVEREX	MAXTOR	SEAGATE
APPLE	IBM	MICROSOFT	SONY
AST	INTEL	MITSUBISHI	TOSHIBA
CONNER	IRWIN	NEC	WANGTEK
CYRIX	LOTUS	OKIDATA	ZENITH

MICRO BASE

800-345-4479

TO ORDER: CALL TOLL FREE
(408)727-6276 CA
(408)727-7307 FAX

3000 Scott Blvd Suite 203 Santa Clara Ca 95054

CIRCLE 423 ON READER SERVICE CARD

**BUY
WITH
CONFIDENCE**

CATALOG
**SHOP
PC WORLD**

FREE MARKETING INFORMATION

Call your PC WORLD representative for actual response numbers our advertisers are receiving in your Category

CATALOG

800-435-7766, 800-435-7760 in CA

CATALOG

Shop The PC World Catalog for fast solutions to your PC needs.

Laptops

LAPTOPS

800-741-LAPS

TOSHIBA COMPAQ
ALTIMA SHARP
EPSON T.I.

Much More...

We carry a full line of Modems,
Memory Upgrades, Exp. Chasis, Etc...

LAPTOP CITY

3399 N.W. 72 AVE. #106
MIAMI, FL 33122

CIRCLE 421 ON READER SERVICE CARD

9-Track Tape Subsystem



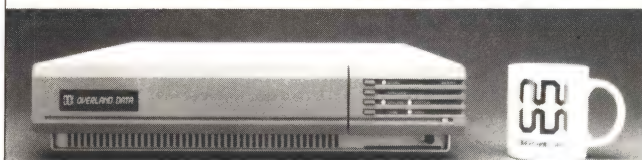
Now you can exchange data files between your IBM PC/XT/AT and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10 1/2" streaming tape drive, tape coupler card, cables and software.

QUALSTAR*

9621 Irondale Avenue
Chatsworth, CA 91311
Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD

ANNOUNCING: AN ADVANCE IN 9-TRACK OF VERY SMALL PROPORTIONS:



Overland Data's OD3210, the smallest autoloading 9-track tape drive in the world.

While everyone else is downsizing and simplifying computers and peripherals, 9-track tape drive manufacturers have somehow managed to buck this trend with drives that are huge and heavy or awkwardly manual loading.

Too bad for them. Introducing the OD3210, designed and built by Overland Data to bring 9-track into the modern office. It's incredibly compact. Portable. Whisper quiet. Uses only 45 watts. And it's extremely reliable. No other drive has fewer moving parts. Best of all, it's surprisingly affordable.

The OD3210 comes with a two year warranty, expert toll-free support, and the ODI Special Service Program. So call us. And find out why some of the best advances are the smallest ones.

1-800-PC9-TRAK
(1-800-729-8725)

Bus. Phone: 1-619-571-5555 • FAX: 1-619-571-0982

OVERLAND DATA
San Diego, CA

CIRCLE 531 ON READER SERVICE CARD

Peripherals

MAINFRAME 9-TRACK for MICRO's

6250
3200
1600
800

Fastest,
Most Reliable
Drives made
for Micro's



800/842-0708

**TDX
PERIPHERALS**

HAUPPAUGE, NY • 516/273-5900

CIRCLE 497 ON READER SERVICE CARD

Never buy another ribbon!

Over 150,000 sold!!



MacInker™, the Automatic Ribbon Re-inker, re-inks any PC printer ribbon or typewriter (black & color) for 5 cents. Lubricating ink cools printhead, extends its life and yields better-than-new printout. Avg. re-inkings per cartridge: 60-100. **Universal MacInker** (spec. cartridge or spool) **\$75.00. Epson or Imagewr. \$45.00.** Adapters available for any multicolor cartridge, **\$40.00.** We have a complete range of black, color, heat transfer, special ink cartridges. Satisfaction or 30 day refund. Free key-beeper-flashlight for orders >\$100.00. **Order toll free** or call to get full information.

(800)547-3303

Computer Friends
14250 Science Pk. Dr.
Portland OR 97229
tel. (503)626-2291
fax (503)643-5379

Major credit cards accepted. POs
from National Accounts accepted
Shipping \$5.00. cod add \$3.30

CIRCLE 483 ON READER SERVICE CARD

Tape Back-Ups



9 TRACK



- PC/Mainframe Data Interchange
- 1600/3200/6250 BPI
- 486/386/AT/XT/PC/PS-2
- DOS, UNIX, XENIX Support



DIGI-DATA

800/782-6395 FAX 301/498-0771

CIRCLE 428 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

MISCELLANEOUS/ Accessories

FREE GLOBAL CATALOG

164 page guide to computer furniture, supplies and accessories

Dial Toll-Free 1-800-8-GLOBAL

GLOBAL
COMPUTER SUPPLIES
11 Harbor Park Dr., Dept.
Port Washington, NY 11050

CIRCLE 508 ON READER SERVICE CARD

Mouse Pads

Custom Printing Available.

Cloth: 13 Colors

Size: 8 x 7 1/4 8 x 9 1/2 8 1/2 x 11

12 Pads 3.25 3.50 3.75

72 3.00 3.25 3.50

144 2.85 3.00 3.25

PLASTIC: Blue, Platinum, Gray, Red & Black. Size: 8 1/2 x 11.

12 Pads 6.50 36 6.00

72 5.75 144 5.25

ASK US ABOUT OUR WRIST RESCUE!

Precision Line Inc.

14505 21st Ave. No. Ste. 206

Plymouth, MN 55447

612-475-3550, 1-800-328-0077

TKS Builds a Better Bar Code Reader!

• Excellent first read rate

• Works with any program — no software required

• Plastic wand is rugged, lightweight and comfortable, even after hours of use (stainless steel wand also available)

• Durable extruded aluminum case

• Reads all major bar code types

• 30-day money-back guarantee

EZBarcode PC-WEDGE II

• Free bar code printing utility included
• Complete with wand, its

only **\$289!**

RS-232 version \$319
Macintosh version \$309
Stainless steel wand, add \$60
Mag stripe option, add \$100

Portable Hand held Data Collection Terminals

Easy-to-use application generated software included free

• PHT-34: Alphanumeric keypad, bar code wand, 128K memory... \$1095

• PHT-60: Graphics touch-sensor LCD display, programmable function keys, bar code wand, RAM card port, 256K memory... \$1795

Bar Code Printing Programs... \$149 each

Print Code 39, UPC, EAN, 2 of 5 on dot matrix or Laser Jet printers

• EZBarcode II - Keyboard or text file input, incrementing, on-line help

• dBARCODE - Prints bar codes from within dBASE

• EZRes - Memory resident bar code printing program

TimeKeeping Systems, Inc.

1306-W East 55th Street • Cleveland, Ohio 44103 • Phone: (216) 361-9995 • Fax: (216) 361-0030

VDT RADIATION WARNING DON'T SIT TOO CLOSE!

The EPA says "There is reason for concern" and advises "prudent avoidance" of electromagnetic fields. Unfortunately, many people just don't realize just how far VLF and ELF radiation extends from computer displays. With Safe's affordable digital gauss meters, you can measure magnetic field strengths.

List \$250. Sale \$149.95.
1-800-222-3003. Ask for Ext. 510.

SAFE TECHNOLOGIES CORPORATION

145 Rosemary St., Needham, MA 02194-3258

CIRCLE 555 ON READER SERVICE CARD

BUY WITH CONFIDENCE

CATALOG

SHOP PC WORLD

CUSTOM KEY CAPS

IBM, Macintosh, Key Tronic, Cherry, & More

- Key Imprinting to your color specs
- Keytop Labels for most popular software
- Templates for most popular software
- Custom Templates to your specs
- Custom Labels to your specs
- Releasable Keys—IBM®, Cherry®, Key Tronic®, Wyse®
- Flexshield™ Keyboard Protectors

Express Turn-around services on Custom!

Call for your FREE CATALOG!

Toll Free **800 937-1337**
602 634-7515 • FAX: 602 634-4620

Holeon CORPORATION P.O.B. 230, Dept. PCWD
Cornville, AZ 86325

CIRCLE 518 ON READER SERVICE CARD

Bar Coding

VARIANT MICROSYSTEMS BAR CODE READERS DELIVER

WAND/ LASER/ MAGNETIC
CARD CONNECTIVITY

- Keyboard wedges (Internal/External) for IBM PC/XT/AT/PS/2 and portables
- RS232C wedges for WYSE, Link, Kimtron terminals
- Autodiscriminate between codes 3 of 9, UPC, EAN, 12 OF 5, Codebar, Code 128
- Interface with wands, Symbol Technologies, Metrologic and Photographic Sciences lasers
- Bar code and label printing software
- Full two year warranty
- 30 Day Money Back Guarantee
- Extensive VAR/Dealer Discounts

VARIANT MICROSYSTEMS
3140 De La Cruz Blvd.,
Suite 200
Santa Clara, CA 95054
Phone (408) 980-1880
Fax (415) 623-1372

CIRCLE 468 ON READER SERVICE CARD

Bar Code Reader for PC, XT and AT

\$295

- Reads all popular bar codes
- Rugged aluminum housing
- No software/hardware modifications
- Stainless-steel wand
- 2-Year Warranty (one year for wand)
- MSDOS Bar Code Print Software \$150
- Works with any program or operating system
- Withstands 6ft. Drop to Concrete

Portable Bar Code Reader for PC or Macintosh

\$645

- 36-Key Alphanumeric Key-Pad
- 32K RAM expandable to over 1 Meg
- Easily programmable screen prompts
- Complete with Hewlett-Packard wand
- Data stored in ASCII Text Format
- Communications Software and Cable Included

TPS

800-526-5920

Call Toll-Free U.S. & Canada

FAX: 415-856-3843

All TPS products carry 30-Day Money-Back Guarantee

MasterCard

VISA

AMERICAN EXPRESS

Electronics 4047 Transport Street, Palo Alto, CA 94303 Phone: 415-856-6833

CIRCLE 522 ON READER SERVICE CARD



Call Sandie Wade
PC World Catalog Manager

1-800-435-7766

1-800-435-7760 (in CA)

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

LABELING SOFTWARE



- For Epson, Oki, IBM, and LaserJet
- Flexible design. Any Format or size.
- On-Screen Label Design, WYSIWYG
- 16 text sizes — 3" reads at 100'
- Bar codes: 2of5, 128, UPC/EAN
- AIAG, MIL-STD, ZIP+4, & Code 39
- Auto-incrementing. File input.
- Logos, symbols — from scanners.
- Reversals, color, soft fonts.
- Powerful, Versatile, Fast, Easy!

- Rotatable, shadable, scalable fonts from 1" to 13" on LaserJet III
- Above label printed with LabelRIGHT™ — \$279
- Other menu driven programs from \$129. SCO/UNIX — \$199

Portable Readers

- Battery operated reader
- Simple, powerful, 64 or 256K memory
- Bar code or keyed input
- Codabar, 2of5, UPC/EAN, Code 39
- Easily programmable prompts
- RS-232 or keyboard models
- Doubles as non-portable reader
- Wand or laser input
- Complete 64K units — \$799

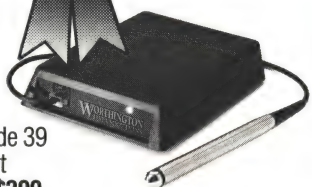


FLEXIBLE MAGAZINE
Outstanding
Price And
Performance!

Bar Code Readers

for PC, XT, AT, PS/2, Mac
and all RS-232 Terminals

- Attaches as 2nd keyboard
- No software changes needed
- 2of5, UPC/EAN, 128, MSI, Code 39
- Magstripe, laser, or wand input
- Complete with steel wand — \$399



2 Yr. Warranty on Readers
Direct from manufacturer
30 day \$ back guarantee!

WORTHINGTON

DATA SOLUTIONS

417 Ingalls Street
Santa Cruz, CA 95060

408-458-9938
800-345-4220

BAR CODE READERS

AMERICAN MICROSYSTEMS
2190 A Regal Pkwy. • Euless, Texas 76040 • (817) 571-9015

- No software changes required
- Data appears as keyboard input
- Reads Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Auto-discriminates between codes
- Accepts WAND, SLOT, CCD, LASER, MAG STRIPE

MAG STRIPE

SLOT (BADGE)

WAND

LASER

CCD

BAR CODE PRINTING SOFTWARE:

- For Epson, Oki, IBM, Dot Matrix and HP LaserJet Printers.
- Prints Code 39, 1-2of5, UPC/EAN, Codabar, 128, 93, 11, MSI/Plessey
- Easy To Use

(800) 648-4452 • FAX: (817) 685-6232
30 Day Money Back Guarantee
One Year Warranty

PC WAND BAR CODE READERS

MORE FEATURES
MORE AFFORDABLE



NEW
IMPROVED

Starting at \$279 with wand! • Transparent operation. • No software required • PC, XT, AT, Mac, PS2, others. Look into our our full line of reliable, competitively priced readers, keyboard and serial wedges, portable data collectors, multi-drop readers, wands, laser scanners, mag stripe readers, and bar code printing software • OEM and reseller discounts. We provide solutions to systems! Custom application software for Data Collections available. Call for details.

INTERNATIONAL TECHNOLOGIES & SYSTEMS CORP.

655-K North Berry St., Brea, CA 92621
(714) 990-1880 • FAX (714) 990-2503
13 Welwyn Ct., Richmond, VA 23229
(804) 741-6725

CIRCLE 501 ON READER SERVICE CARD

Business Opportunities

Software Dealers Wanted

Perfect Care program needs dealers. We teach how to sell, install & support our medical billing sys. to MDs...a profitable high growth service industry. We offer:

- Training & continuous support
- 7 yrs of medical computer exp.
- Protected territories nationwide.

Ted Itzkowitz
STI Computer Services, Inc.
251 W. DeKalb Pike-Concord 107
King of Prussia, PA 19406
215/768-9030

Own a Billing Service!

Great part time PC based business. Provide invoicing and accounts receivable services to small businesses. \$500-\$5000 income monthly. \$289 for complete set-up incl; Software, proven marketing plan, promotional materials, and ongoing support.

Bluejay Systems
2579 Clematis Street
Sarasota, FL 34239
(813) 365-3357

Catalogs

Books



Finally, the desktop
reference books you need
are available direct to you at
DISCOUNT!

Hundreds of titles from major
publishers, beginner's guides to
advanced programmer's manuals.

Here's a sample from

QUE

	LIST	COST
MS-DOS 5 User's Guide	\$29.95	\$23.95
Using Borland C++	29.95	23.95
Using Excel for Windows	29.95	23.95
Using WP 5.1 Spec Ed	27.95	19.95
Using Windows 3	24.95	20.95
Using 1-2-3 Spec Edition	29.95	23.95

FREE Catalog Available

800-READMES

800-732-3637

MasterCard, VISA or CCD
10 am - 6pm EST Mon-Sat

CIRCLE 578 ON READER SERVICE CARD

FREE Computer Catalog

OVER 4000 SOFTWARE, HARDWARE, ACCESSORIES AT DEEP DISCOUNTS.

JOIN OUR FREQUENT BUYERS PROGRAM AND WIN FREE GIFTS. ASK US ABOUT OUR LOWEST PRICE AND MONEY BACK GUARANTEES. [AD # A06C]

the **computermill**

1.800.800.5592

FAX 415.623.7403

9 AM - 6 PM, MON - FRI, PST

CIRCLE 499 ON READER SERVICE CARD

IBM PCjr Specials

Full line of IBM PCjr hardware accessories including: Memory expansions, Second floppy drive, Hard drives, Cables, Larger keyboards, Modems, Printer expansions, Manuals, & software. Many more items are available. Send today for the complete catalog.

Computer Reset
Dept. PW, Box 461782
Garland, TX 75046-1782
214/276-8072

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Computer Insurance

SAFWARE

Insure your computer. Safeware provides full replacement of hardware, media & purchased software. As little as \$49 a year provides comprehensive coverage. With our blanket coverage, no lists of equipment are needed. One phone call does it all! Call 8am to 10pm EST (Sat 9 to 5)

Safeware, The Insurance Agency
2929 N. High St., PO Box 02211
Columbus, OH 43202
800/848-3469, 614/262-0559



We transfer files between incompatible computers. Thousands of formats supported among dedicated word processors, DOS, DEC VAX, UNIX, XENIX, Apple and Macintosh.

- Cartridge tapes (incl. TK-50, TK-70)
- 9-track tape (800 to 6250BPI)
- 3.5", 5.25", 8" floppy disks and Syquest

For cost effective, quality conversions, call
Disk Interchange Service Co.
2 Park Drive • Westford, MA 01886
(508) 692-0050

CIRCLE 525 ON READER SERVICE CARD

Data Recovery

ONTRACK DATA RECOVERY

The Data Recovery Professionals

Ontrack Data Recovery specializes in recapturing data from any microcomputer hard drive or floppy diskette.

- 95% Success Rate • Fast Turn Around
- Priority service available • Expertise with Novell, DOS, Macintosh, OS/2, Unix, Xenix, Bernoulli, Sun and more!

Find out why we are the leaders in data recovery - call an Ontrack Data Recovery representative today for more information.

1-800-872-2599

International: 612-937-5161 • FAX: 612-937-5750

CIRCLE 464 ON READER SERVICE CARD

Data/Disk Conversion

CONVERTING YOUR DISKETTES?

ENTRUST THEM TO US
2500 Word Processor & Computer formats 3 1/2", 5 1/4", 8" DISKS, MAGTAPES, MAGCARDS, CARTRIDGES, CASSETTES

DISK DUPLICATION OCR SCANNING SERVICES

Customized conversions too!
Call us for quality, best prices and quickest turnaround time

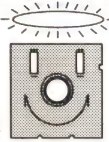
COMPANY COMPENDIA, INC.
TEL.: (312) 419-8771 (Chicago)
FAX.: (312) 419-1390

CIRCLE 561 ON READER SERVICE CARD

SCANNING any font or typestyle disk or tape CONVERSION DUPLICATION any size, any quantity

- Data Entry
- Custom Programming
- Data Management
- Bar Code Conversion

(708) 858-4566



We perform miracles!

MEDIA CONVERSION CORP.

Free Tests and Quotations—24 Hour Turn-Time



CIRCLE 462 ON READER SERVICE CARD

TAPE/DISK CONVERSIONS

Conversion services to or from over 2000 computer systems:

- Magtapes • Mini Computers
- Micro Computers • Typesetters
- Word Processors

CALL THE INDUSTRY LEADERS

PIVAR COMPUTING SERVICES, inc.

800-CONVERT

165 Arlington Heights Rd #W
Buffalo Grove, IL 60089

BUY WITH CONFIDENCE!

CATALOG

RGA DATA CONVERSION CENTER

Tape, disks, micros, minis, mainframes, word processors, typesetting, and more...

- Database Management
- IBM 4381 on premises
- Conversions to/from all systems
- Hundreds of conversion programs
- Keying, labels & laser letters
- Carrier route & Qualifications

(212) 779-7667

Ralph Garner Associates, Inc.
99 Madison Avenue, New York, NY 10016
Professional services since 1967

CIRCLE 408 ON READER SERVICE CARD

Disk Copy Service

DUPLICATION FROM \$.59 HIGHEST QUALITY MEDIA

MSDOS duplication from \$.59(5.25") and \$.89(3.5"). Prices go even lower as you continue to order!

- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
- Custom Packaging & Assembly
- Colored Media Available
- Special Rates For Demo Software & Site Licensing
- Educational Discounts Available
- 24 Hour Turn-Around
- Guaranteed Products

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 422 ON READER SERVICE CARD

Disks

FORMATTED DISKETTES BASF, VERBATIM, SONY

WITH FORMAT	QTY 250 MIX & MATCH	WITHOUT FORMAT
\$.44	5.25" DS/DD	\$.39
\$.69	5.25" DS/HD	\$.59
\$.65	3.50" DS/DD	\$.56
\$1.19	3.50" DS/HD	\$1.09

- **FREE FORMATTING** on First Order
- **TYVEC SLEEVES** & Labels Included
- **COLORLED MEDIA** Please Add \$.05
- **PRIVATE LABELING** Available
- **SAME DAY** Shipping
- **MONEY BACK GUARANTEE**

800-255-3142

Diversified Systems Group, Inc.
PO Box 1114, Issaquah WA 98027

CIRCLE 448 ON READER SERVICE CARD

Duplication Services

Providing the highest quality disk duplication through state-of-the-art equipment, quality media and attention to detail:

- All 3.5" & 5.25" Formats
- 100% Verification
- Label Print & Assembly
- NO Minimums per run
- 24 Hour Turn-Around
- Customized Services

Duplication Services Corporation
Scottsdale, Arizona
(800) 322-8392 or (602) 451-4648

Security

HARDWARE VIRUS-KILLER

Protect accounting and word processing data with U.S.-made PC-Cure™, a new electronic device in an RS-232 line that disables computer viruses. IBM- and Apple-compatible. With power pack and 2 software drivers. **\$279** (+\$4 UPS)
Seven Mountains Scientific, Inc.
P.O. Box 650
Boalsburg, PA 16827
Phone/fax: 814-466-6559

CATALOG

Shop The PC World Catalog for fast solutions to your PC needs.

Slides

Slides overheads

Over a hundred PC & Mac programs supported. Slides from word processing, graphics and presentation programs. From \$3.00/slide. Fast service.

Elegant Graphic Slide Service

(707) 795-3272
FAX (707) 795-3286

CIRCLE 491 ON READER SERVICE CARD

Supplies

FORMS and SUPPLIES

Business Forms

- * Custom and Stock
- * Dac Easy, Peachtree + hundreds more
- * Business cards, letterhead,
- * Envelopes, labels.
- * All types of supplies.
- * Paper, Ribbons, Toner, Diskettes
- * Tapes, Rubber Stamps

Volume Discounts Available.

Reference this ad for a 10% discount.

M&V Computing and Printing

5698 Novack Street

Winston-Salem, NC 27105

1-800-729-5338

LASER CARTRIDGES

Upgrade your disposable laser drum with a **BLACK DIAMOND™**.

BETTER THAN ORIGINAL PRINT
LONG-LIFE BLACK DIAMOND™ DRUM
ULTRASONICALLY CLEANED CORONA
COMPLETELY REMANUFACTURED
UNCONDITIONAL GUARANTEE

\$69.95

\$39.95

WITH NEW BLACK DIAMOND™ DRUM
NEXT (ea) FIVE RECHARGES

**FREE CATALOG
BEST IMPRESSIONS**

13633 N 51st Way • Scottsdale, AZ 85254
Fax (602) 971-2462 1-800-798-2345

CIRCLE 580 ON READER SERVICE CARD

Find compatible forms for your software!



OVER 1,600 GUARANTEED COMPATIBILITIES

NEBS has the tools you need to build a successful business.

NEBS is the nation's leading supplier of business forms to small businesses. Over 1,000,000 satisfied customers count on NEBS for:

Software compatible forms — checks, invoices, statements, multipurpose and custom forms. NEBS also has a full line of stationery, supplies, laser printer products and business software.

Risk-free ordering! Satisfaction guaranteed or your money back.

Fast delivery! Standard imprinted forms are shipped in 3 business days; we ship supplies and software the next working day!

Call Today for your **FREE NEBS Computer Forms Catalog**

Toll-Free 1-800-225-9550



NEBS, Inc.
500 Main Street
Groton, MA 01471

Mail Code 47980-IQSPG92

CIRCLE 572 ON READER SERVICE CARD



Remanufactured Cartridges
For Canon, Hp, Apple
Qms Laser printers • **20% MORE TONER**
& Canon PC Copiers • **100% Guaranteed**

ALR Tech, Inc.
6325 SW 77 Ct, #211
Miami, FL 33155

Tel: (305) 271-4953
800-484-1008/5475

Also Sharp & IBM 4019 recharged
Recharge 5 get one recharge **Free**

CIRCLE 569 ON READER SERVICE CARD



U.S. Cartridge Service
NOT A GOVERNMENT AGENCY

TONER CARTRIDGES. REMANUFACTURED

for laser printers and PC Copiers
2 DAY DELIVERY AVAILABLE
92 RANDOLPH AVE.
SO. SAN FRANCISCO, CA 94080

\$29.95

20% MORE TONER
100% GUARANTEED
24hr TURNAROUND
WE BUY EMPTIES!!!

1-800-553-4345

CIRCLE 466 ON READER SERVICE CARD



reconditioned TONER cartridges!

BETTER THAN NEW!
• 20% MORE TONER
• DARKER PRINT
• 100% GUARANTEED

for laser printers & Canon PC Copiers
From **\$44.95**

We buy empties
call for brochure
800-426-8196

Willow Products Corp.
3857 Willow Ave. Pgh, PA 15234

WILLOW

CIRCLE 535 ON READER SERVICE CARD

SOFTWARE Accounting

THE GENERAL STORE Retail Store Management

The complete software system for Retail. Multiuser/Network ready. Supports cash drawers, barcode, receipt printers, customer displays, scales and online credit card authorization. Controls all types of retail stores. Multistore, size-color matrix, parts explosion and serialized items. Field proven in thousands of installations. Turnkey hardware & software systems.



**ACCOUNTS RECEIVABLE
INVENTORY CONTROL
POINT OF SALE
ACCOUNTS PAYABLE
GENERAL LEDGER
MAILING LIST
• HARDGOODS
• APPAREL**

\$995 Complete system
Dealer inquiries invited.

CRICHLAW DATA SCIENCES
804-523-6600 Fax 523-4668

CIRCLE 470 ON READER SERVICE CARD

What do more than 1400 Government and Nonprofit Organizations Know?

**When You Need Fund
Accounting Software... You
Need American Fundware.**

American Fundware provides powerful software solutions — written specifically for the government and nonprofit sectors — that solve your fund accounting needs. Easy to Learn. Easy to Use. Easy to Produce Results.

CALL AMERICAN FUNDWARE TODAY.
1-800-551-4458 or Fax: 1-303-879-6850
P.O. Box 773028, Steamboat Springs, CO 80477

CIRCLE 502 ON READER SERVICE CARD

**REACH
2.5 MILLION
BUYERS.**

**ADVERTISE IN
The PC World Catalog.**

CALL 800-435-7766
In CA: 800-435-7760

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Accounting

\$45 — Complete Accounting Software

PACIOLI 2000™ CONTAINS: IBM & Compatibles
• Billing, A/R, Inventory, A/P, G/L, Purchasing, Budgeting, Auditing — All Integrated.
• **FREE** UNLIMITED CUSTOMER SUPPORT.
• **FREE** 2 HOUR TRAINING VIDEOTAPE.
• Use as single-user or multi-user system. (network ready)



"The equal of other high end accounting programs in every way but cost!"
New York Times, July 1, 1990
VISA/MC Orders only: 800-243-1515 Ext. 800 MJ Questions: 214-931-2033
Or Check/MO — Add \$6 shipping to: S Software, 2880 Bergey Road, Dept 800 NJ Hatfield, PA 19440

CIRCLE 435 ON READER SERVICE CARD

DATASMITH™ Payroll

HELP!! Forgot to turn in my hours...
dog tore my check...printer jammed...
power failed...need my check today...
took my pay in cash this time...
accidentally entered LAST week's
hours again?! DATASMITH has easy,
helpful corrections. Order demo today!
LPI Information Systems
10020 Fontana
Overland Park, KS 66207
913-381-9118

dBASE Business Tools

- General Ledger
- Accounts Payable
- dInvoicer & A/R
- Sales Analysis
- Order Entry
- Purchasing/Invnty
- Payroll
- Lazy-Forms
- Job Costing
- Job Estimating
- Bill of Materials

\$99 ea. incl. Source Code M/C-AMEX-
Visa-Check-COD
Datamar Systems
8586 Miramar Place
San Diego, CA 92121
800/223-9963, 619/452-0044

Business Applications

BizPlanBuilder™

Organize ideas, coordinate plans — convince others to support you. Intuitive, logical business & marketing plan template on diskette for launching a new product, service, or company. 90+ pages of outlines, headlines, written texts, tables... formatted into 33 ASCII text files.

Follow tutorials, fill in the blanks, edit into a finished plan. 126-page reference includes info about getting money from banks, SBA, investors. Integrated financials in Lotus 2.01 (convert or modify): detailed Budget, Income Statement, Balance Sheet (w/ 16 ratios), Cashflow, Break-Even Analysis. Dazzle your boss, banker or investors. 37,000+ sold! v 4.0 \$129 +shipping

Leverage Your Time & PC
JIAN® 800/ 346-5426
415/ 941-9191
MC-Visa-AX 30-Day Guarantee

CIRCLE 564 ON READER SERVICE CARD

Do You Ship by UPS®?

If you do, the Aristo Parcel Shipping System (APSS™) is for you! Meets all UPS requirements. Prints COD & regular labels, Pickup Manifest, etc. Saves customer list. Calculates zones & charges. Flexible setup menu to suit your needs. On-line help. Optional scale interface & other carriers. (RPS, Airborne, Fed EX, USPS, LTLs, etc). 60 Day \$ back Gtd. UPS acceptance gtd. Full featured demo disk: \$4 s/h.

Aristo Computers, Inc.
6700 SW 105th Ave. #307-J
Beaverton, OR 97005
800/3ARISTO, 503/626-6333

Pay less to ship UPS!

Automate UPS shipping, save time and money with the Parcel Shipping Program (PSP). Prints UPS labels and COD tags. Maintains customer list. Calculates UPS charges and UPS Manifests, ensures accurate billing. Supports residential & commrc. rates. UPS Approval & \$ back gtd. \$299.

\$5 Demo
East Hampton Industries, Inc.
81 Newtown Lane, Drawer 5069
East Hampton, NY 11937
800-645-1188, 516-324-2224
FAX 516-324-2248

UPS Shipping Software

Use stand-alone or integrated with your accounting software as a pop-up window. No need to retype information. Computes zones & charges. Prints Manifest, COD tags, labels, etc. Also provides batch processing & customer database. Optional 100 wt, ground saver & RPS. Single user, \$149, Network, \$295, Demo \$10.

V-Technologies
P.O. Box 4321
Waterbury, CT 06704
(203) 879-6960

Membership Software!

Finally there's an easy way to organize your church & alumni memberships!

- * Customize up to 100 fields on one screen!
 - * Contribution system with bar code available.
 - * General ledger, accounts payable & budgets.
 - * Computer systems available.
- Authorized IBM business partner.
Why waste time with your old membership methods? Call or write today for more information.
Angel Systems, Inc.
323 N. Wisconsin Avenue
Massapequa, NY 11758
800-237-0375, 516-420-0000

Church Partner

Written by Computer professionals involved in church management. Skilled users love its power, depth and flexibility. Novices love its ease of use. 13 optional modules with support and upgrades. For IBM compatibles, LANs, Macintosh, XENIX. We understand computers and churches. New Release: School Partner, for church-related dayschool and child care.

Summit Systems, Inc.
Suite 121, 16 Berry Hill Rd.
Columbia, SC 29210
803-798-9749, FAX: 803-731-0349

Church Applications

CHURCH SOFTWARE

Discover for yourself why more churches are choosing **PowerChurch Plus®**. Try out the leading membership & accounting package. Sale priced thru 9/91. Call today for your **FREE** full-working **DEMO**.

F1 SOFTWARE, 6300 Variel Avenue, Suite H, Woodland Hills, CA 91367
(800) 486-1800 (818) 888-1800

CIRCLE 562 ON READER SERVICE CARD

Church Mgm't Systems

Easy-to-use, flexible & integrated. Network version available. Local representatives & toll-free support back a comprehensive line of Church & School products. 1200+ satisfied Church, School & Government users. Write or call,
The Software Library
3300 Bass Lake Rd.
Brooklyn Center, MN 55429
800/247-8044, 612/566-4212

DISK-COUNT SOFTWARE		800-448-6658		908-541-8768		HOURS		
		LOWEST PRICES INCLUDING SHIPPING				M-F 10-7 S 9-1		
				ENTERTAINMENT		SOUND CARDS		
386 Max 5.1	69	Facelift	59	PC Anywhere IV	95	Ad Lib	95	
3-D Charts to Go	55	Generic Cadd 5.0	269	PC Kwik Powerpak	65	E Z Cosmos	42	
Above Utilities for DOS	51	Go Script Plus	169	P C Tools 7.0	109	F-15 II Strike Eagle	34	
Adobe Type Manager	61	Grammatik IV	59	Peachtree Bonus	199	F-15 II Scenario Disk (Iraq)	19	
After Dark for Windows	29	Harvard Graphics	235	PFS: First Choice	75	Falcon 3.0	42	
A.T.M. Plus	125	Harvard Graphics 2.3	275	PFS: First Publisher	105	Gunship 2000	42	
Alpha Four	289	Hijaak	99	PFS: Window Works	75	Heart of China	37	
Ami Pro 1.2	285	Just Write	75	Procomm Plus	69	King's Quest V	37	
Animator	265	Legacy	299	Project for Windows	385	Links	37	
Autosketch	135	Lotus 1-2-3 v2.3	319	Publishers Paintbrush	265	Mickey's ABC or 123	31	
Becker Tools	75	Lotus 1-2-3 v3.1	370	Publishers Powerpak	47	Microleague Football	26	
Catchword	125	Lotus Works	84	P O A-B	225	PC Globe or USA	37	
Central Point Antivirus	77	Mathcad	299	Q E M M	315	Print Shop	36	
Check-it	80	Math Type	155	Quattro Pro 3.0	35	Random House Encyclopedia	69	
Corel Draw 2.0	329	Microsoft C	285	Quicken 4.0	36	Sim Earth	41	
dBase IV	449	Microsoft Fortran	250	Sitback for DOS	55	Space Quest IV	37	
Definitions Plus	49	Norton Utilities 6.0 (intro)	99	Spirinite II	56	Where is Carmen in USA	31	
Desqview	69	Object Vision (intro price)	92	Toolbook for Windows	279	in America's Past	36	
Desqview 386	115	On Target	244	Ventura Publisher	499	in World (Deluxe)	49	
Draw Plus	119	Pagemaker 4.0	459	Word for Windows	285	Wing Commander II	49	
Excel for Windows	295	Pascal for Windows	155	Word Perfect 5.1	229			
						MIDI INTERFACE		
						Music Quest PC Midi Card		95
						MOX - 16		145
						Roland MPU-1PC		135
						Cakewalk		95
						Copyist Apprentice		95
						Master Tracks Pro		199
						Music Printer Plus		419
						SKINS		
						Keyboard Skins		15
						Dust Covers		15

Master Card, Visa, Discover & American Express accepted. No surcharge on credit cards. No C.O.D.'s. By mail: P.O. Box 3, Carteret, NJ 07008. All products are new. We do not guarantee compatibility. NO REFUNDS. Exchanges on defective merchandise only. NO EXCEPTIONS. Shipping charges extra. To the contiguous 48 states. Alaska and Hawaii \$11.95 1st pc. \$1 ea. add. APO/FPO orders add \$10.00 per pc. Add \$1.00 per pc. for shipping and handling.

Master Card, Visa, Discover & American Express accepted. No surcharge on credit cards. No C.O.D.'s. By mail: P.O. Box 3, Carteret, N.J. 07008. All products are new. We do not guarantee compatibility. NO REFUNDS. Exchanges on defective merchandise only. NO EXCEPTIONS. Shipping charges: To the contiguous 48 states \$4. Alaska and Hawaii \$10. 1st pc: \$1 ea. add. APO/FPO boxes \$6. Canada \$9. 1st pc: \$1 ea. add. N.J. residents add 7% sales tax. Call for current prices and availability. NEW VERSIONS & TITLES STOCKED DAILY.

CIRCLE 546 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Construction

COST ESTIMATING

Comprehensive, stand-alone cost estimating systems for general and specialty construction. Easy to use, pull-down menus, Lookup windows. All systems include built-in industry-specific cost database, on-screen Takeoff Calculator, User's Manual and free unlimited telephone support.

- **PC-Estimator** - General construction \$99
 - **Remodel Estimator** - Home Improvement \$89
 - **Electrical Estimator** \$295
 - **Plumbing Estimator** \$295
 - **Painting Estimator** \$295
 - **PC-Adjuster** - Property Claim estimates. \$195
- Demo/Shareware package for any of above. \$25

VISA/MC/Check/MO/COD. S&H \$6.50.
CA residents add sales tax. COD add \$5.00.
CPR, Inc. P.O. Box 3465, Berkeley, CA 94703
(Dealer inquiries welcome)

Call: (415) 654-8338

CIRCLE 444 ON READER SERVICE CARD

Database Publishing

Directories In An Instant!

Use INSTANT DIRECTORY to create company directories, client lists, white pages & more. With INSTANT DIRECTORY'S easy-to-use database and 30 preset reports, you can print your updated directory in an instant. No desktop publishing skills needed. SAVE \$70 off list, buy now for \$79. DIGITAL COMPOSITION SYSTEMS 1-800-527-2506 ext. 6251

CIRCLE 505 ON READER SERVICE CARD

Data Entry

Replace dedicated data input systems
Front-end mainframe applications

KeyEntry III

- ▶ LAN or stand-alone environments
- ▶ ScreenPainter and MenuManager included
- ▶ Batch Control System and Reformat utility
- ▶ Spanish, German, and French versions
- ▶ Outstanding customer support
- ▶ Thousands of users worldwide
- ▶ OS/2 version

800-533-6879

FREE DEMO DISK
AVAILABLE TO
QUALIFIED COMPANIES!



SOUTHERN COMPUTER SYSTEMS, INC.
(205) 251-2985 • FAX (205) 322-4851
In UK: SCS Europe Ltd. 0753-365501 FAX 0753-36765

DATA ENTRY

Why have over 85% of the largest companies in the U.S. selected the RODE/PC Data Entry System?



DPX • 490 California Avenue
Palo Alto, CA 94306

CIRCLE 558 ON READER SERVICE CARD

The answer will be obvious when you call for information and a free demonstration today.

(415) 323-8195

Viking Data Entry

Professional Quality Software

- Used by U.S. Census
- Advanced Validation
- Sequential/ISAM files
- MS/DOS, UNIX, XENIX, VMS, AIX
- Technical support
- Re-key verify

Viking Software Services
4808 E. 67th St., Ste. 100
Tulsa, OK 74136
918/491-6144 FAX: 918/494-2701

Educational



Get Back to Basics

The best video training just got better !!

Now \$2995 reg. \$79.95

Limited time ONLY

UNCONDITIONAL MONEY BACK GUARANTEE

For a complete list of software titles
1-800-759-2737

MV, No C.O.D.'s Software Simplicity
add \$4.50 S&H

New Freedom PA 17349

CIRCLE 559 ON READER SERVICE CARD

BS & MS in Comp Sci

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science & Master of Science in Computer Science at home. BS subjects covered are: MS/DOS, BASIC, PASCAL, C, Data File Proc., Data Struct. & Operating systems. MS includes SW Engineering, AI and other topics

American Inst. for Computer Sciences
2101-WO Magnolia Ave. So. Ste 200
Birmingham, AL 35205
800/767-2427, 205/323-6191

MATH EDITING

MathEdit lets you put

$$Z = \frac{(\bar{X}_1 - \bar{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

into WordPerfect, Word, WordStar, & other documents without learning any codes!

- A display window lets you see your equation as you type it
- MathEdit is \$199



30 West First Ave. Ste. 100
Columbus, OH 43201
(614) 294-3535

CIRCLE 447 ON READER SERVICE CARD

Employment

JOBHUNT™ Software!

"JobHunt Helps You Get a Job". Byte. Gives names, addresses, phone/fax of leading employers. Displays by region or job function. Quickly mail-merges and prints personalized cover letters and labels for targeted mass-mailing of resumes. 30-day money back guarantee. Only \$39.95 + \$4.95 S&H. Free Update. Order Today!

Scope International
P.O. Box 25252, Dept. 1091
Charlotte, NC 28229-5252
1-800-THE JOBS or 704-535-0607
1-800-843-5627 24 Hours

Entertainment/ Games



Adult Software

Must State
Age Over 21

Disk #1 — An unbelievable visual encounter — MUST SEE!

Disk #2 — **NEW!** 3 encounter games for friends and lovers guaranteed to shed both clothes and inhibitions.

Disk #3 — An anatomical arcade game with unusual ammunition.

Disk #4 — 2 more incredible visual encounters — impress your friends.

Disk #5 — Create your own fantasies about friends and lovers.

Disk #6 — **NEW!** View, print, or edit ten sizzling pictures including celebrities.

\$7 each, any 3 for \$17, or all 6 for \$32. for IBM & compat. CGA, EGA or VGA graphics req'd.

eXXcapades — The FIRST adult game with TRUE SOUND and 80 sizzling color VGA scenes!
• Options for gender preference and game intensity • Play with 2-8 close friends • Over 5MB of pure action!
• Fulfill your carnal passions with new experiences • Find out how you and your partner can better relate.

\$79 — Special offer: \$69 with purchase of any CC1, CC2, CC3 disks above — **OURS EXCLUSIVELY!**
ADD \$3 S/H • 3.5" OR FOREIGN ORDERS ADD \$2 PER DISK • IN PA ADD TAX.

VISA/MC orders only 800-243-1515 Ext. 600 BO

24 HRS/7 DAYS • Or check/MO to: SeXxy Software, 2880 Bergery Rd, Dept. 600 BO, Hatfield, PA 19440

CIRCLE 523 ON READER SERVICE CARD

Adult VGA Software

Visualize the full potential of VGA and SVGA.

Hi-res, 256 color images.

- Vol. 1 **Swimsuit** (6 disks per vol.) \$13.95
- Vol. 2 **Au Naturel** \$13.95
- Vol. 3 **Daring** \$13.95
- Vol. 4 **Adults Only** \$13.95

Hi-res VGA animation. Just like the movies!!!

- Vol. 5 **Adult VGA Movies** \$13.95
- Vol. 11 **Hot Italian Movies** \$13.95
- Vol. 12 **Long Length Movies** \$13.95

Special! Order 4 volumes, select 5th free!
Choose from six 5.14" DD disks, three 5.14" HD (best deal), three 3.12" DD, or two 3.12" HD for each vol. All disks are full. Vol. 12 available in only HD disks.

Get more great software for less. Guaranteed. Fast service. Order today. Include \$3 S&H. Must state age 21 or over. Send check or MO to:

CJCware
MC/VISA orders or free Dept. CW, P.O. Box 36
catalog call (309) 452-7760 Normal, IL 61761

CIRCLE 496 ON READER SERVICE CARD

THE LOTTO EDGE HI-TECH LOTTO ANALYZER

Quality Computer-Assisted Number Analyzer

You make your analysis and choose your game-play numbers from computer calculated displays and reports. Data is based on your state's winning number history, using hi-tech statistical methods. You update weekly. Min. 256K. Programs, manual, one state's data, \$44.95 + \$4.00 shipping and handling. Each additional state \$10.95. Credit card: 800/992-4045, ext. 439; (CA) 800/777-8814, ext. 439. Check/M.O.

The LOTTO EDGE, ODDS UNLIMITED,
P.O. Box 1223, Addison, IL 60101

**PLAY TO WIN
LET YOUR PC DO THE WORK!**

CIRCLE 549 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Entertainment/ Games

Windows 3.0 BACKGROUNDS

Send Check or Money Order to:
Starware Publishing Corp.
P.O. Box 4188 - Dept. 13
Deerfield Bch, FL 33442

Include \$3 S&H Add \$3 for 3.5"
Add \$3 for foreign FL add 6%
MUST STATE AGE 21

**Easily Convert to
BMP, GIF, IMG,
MAC, PCX, RLE**

**MEGABYTES
of color images
in every product**

601 Swimsuits	16 color 14.88	256 color 19.88
602, 603, 604, 605 and 606		
Adult	16 color 14.88	256 color 19.88
105 601 - 603	16 color 37.88	256 color 49.88
106 604 - 606	16 color 37.88	256 color 49.88
107 601 - 606	16 color 72.88	256 color 94.88

CIRCLE 550 ON READER SERVICE CARD

Sports Handicapping

Thoroughbred shareware system \$8.00. Commercial horse racing & greyhound handicapping software \$32.95, \$52.95, \$67.95, \$77.95 each. Up to 17 entries analyzed: class, speed, times, odds, track, post, stretch, & finish. Pro Football software - \$42.95. Handicap races & games in minutes. MC/VISA accepted. Free info.

SOFTWARE EXCHANGE
PO Box 250002-PW
W. Bloomfield, MI 48325
313/626-7208. Orders:
1-800/527-9467

ADULT SOFTWARE

- * VGA-SVGA
- * Exclusive "Loopscans"
- * 4 disks \$10 per SET
- * SETS:
- * #1A - Unbelievable
- * #2A - Sensational
- * #3A - Must See
- * #4A - Beauties
- * #5A - Gems
- * Orders Shipped At Once

Free Sample Disk (include \$1 shipping & handling)
Must be over 21
LOOP PREMIUM GRAPHICS
P.O. Box 597186
Chicago, IL 60659

Financial

Control Your Finances!

With Maiden Account Manager II (MAM2) Checkbook accounting software for IBM PCs and compatibles. Turn your PC into your personal accounting assistant! Features: Running Balances, Versatile Reports, Password Security, On-Line Help, Calculator, Report Editor, Budget Graph, and more. Easy to learn and use. Manage your home or office or both! Only \$49.99 + S&H. Order today! 30-day money-back guarantee.

Maiden Financial Software
P.O. Box 5058 C
Laurel, MD 20726
(301) 763-5828

Loan Amortization Software

A favorite of banks & atty's worldwide! Over 5000 sold!

- ✓ Easy Amortization Schedules
- ✓ Replace Financial Calculators
- ✓ Change variables instantly

- ✓ Creative Financing
- ✓ Fixed or Adjustable
- ✓ APR to US Reg. Z
- ✓ Bi-weeklys & more
- ✓ Prepaid Int.
- ✓ Points & Fees
- ✓ PMI Charges
- ✓ Irregular Pymt's
- ✓ Auto. Extra Pymt's
- ✓ Fixed Principal Pymt's
- ✓ Balloon Pymt.
- ✓ Negative Amortization
- ✓ 360, 365, 360/365 int.
- ✓ Solve for an Unknown
- ✓ Yield & Loan Price
- ✓ Store loan to disk
- ✓ Report titles
- ✓ Report comments
- ✓ Calendar or Fiscal Yr
- ✓ No Spreadsheet requ.
- ✓ Editing of data entered
- ✓ Context help screens
- ✓ 18 Digit Accuracy

Exec-Amort™ \$149.95
Mini-Amort™ \$79.95

5 user Network Version: \$450.00

Order Today Call 800/858-8448

Fax Orders Call 313/791-3010

Phone (313) 791-0770

Electronics,
36380 Garfield, Suite 1
Fraser, MI 48026 USA
Demo Disk \$5 Each, VISA, MC, AMEX, Discover
Ground Ship \$5, Air \$13, COD's add \$3.75
International add \$15 (Excludes APR, Pts & Fees)

CIRCLE 526 ON READER SERVICE CARD

Flow Charting

Windows Flowchart\$129

RFFlow 2.0 is a professional drawing tool for flowcharts and org charts. Requires Microsoft Windows 3.0. 100 shapes auto adjust in size. Diagonal lines and curves. Auto line routing and re-routing. Click on a shape to bring up a sub-chart. Move charts to other apps. via the Clipboard. Call for free trial disk.

RFF ELECTRONICS
1053 Banyan Court
Loveland, CO 80538
303/663-5767 FAX: 303/669-4889

Genealogy

Family Roots™

Do it YOUR way! Huge variety & capacity for your family history. Make pedigree charts & descendants charts, group sheets, person sheets, indices, histories, address labels, searches, & much more. Call for FREE information. Satisfaction guaranteed. Any PC or compatible. MC/VISA/AmEx welcome.

QUINSEPT

Box 216

Lexington, MA 02173

800/637-ROOT, 617/641-2930

Graphics

FREE CLIP ART 50+ OF OUR BEST IMAGES

TRY US!

Get 50+ of our
best selling
images - FREE

Credit Cards only!

PAY ONLY \$5.00 SHIPPING

**SMC
SOFTWARE PUBLISHERS**
619 931-8111

CIRCLE 539 ON READER SERVICE CARD

3 Free Slides from your PC

COMPUTER SLIDE EXPRESS converts your graphic files into 4000 line full color slides, overheads or printouts. All popular programs supported. 24 hour service by modem or disk. As low as \$6.50. Call or FAX for your FREE valuable (\$27.00) coupon & FREE 48 page catalog.

Visual Horizons
180 Metro Park
Rochester, NY 14623
Phone: 716/424-5300
FAX: 716/424-5313

Color-Match Graphics

Finally you can match colors perfectly!

- * Create an RGB colorbook & eliminate screen-to-hard-copy color variations.
 - * Output to screen, printer, or film up to 16.7 million RGB colors in a 160 per page square grid format.
 - * PC SVGA/TARGA/VISTA/HERCULES compatible.
 - * Save screens in TGA or PCX file format.
 - * Compatible with all output devices
- Electric Windows/Fashion Grafix**
Tel 212-355-1071 Fax 212-888-8172

Health

Eat Healthier- Get FIT !!



Top-Rated software has best data available for 2400 foods, 30 nutrients. Plan diets, menus, recipes; shows nutrient excess, deficiency, ratios, graphs. Used by thousands: USDA, fitness colleges, hospitals, & home-users

Send Now: FREE Demo Disk !!

**ESHA
RESEARCH**

PO Box 13028-B
Salem, OR 97309
Ph: (503) 585-6242

CIRCLE 573 ON READER SERVICE CARD

Inventory Control/ Management

Mr. QuarterMaster

Providing the IC needs of business, govt. & institution stockrooms since 1983. Features include receipts & issues updating, report generation, issue slip, etc. Price \$140. Manual alone with demo: \$30 deductible toward later purchase. Also available: Sales reporting, PO, Estimating, Retail IC & Multi-whse IC systems.

R/L Systems
106 New Haven Avenue
Milford, CT 06460
203/878-0376

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

POINT OF SALE INVENTORY

Inventory
Control is....
**MONEY IN
THE BANK**
\$189 - \$489
FREE demo



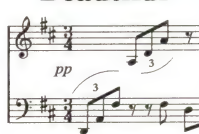
Maintains Inventory
Writes Invoices
Uses Cash Drawer, Receipt,
Printer, Barcode Scanners
50 different programs
Receivables & Gen. Ledger

Freeman Software - Garland, Texas
800-426-6598 214-270-0625

CIRCLE 445 ON READER SERVICE CARD

Music

Beautiful



ACTUAL OUTPUT (Reduced)

L-M-P Laser Music Processor

WYSIWYG desktop music scoring on your IBM PC/AT, for the HP-LaserJet/Epson FX/IBM Proprinter printers, VGA/EGA/MCGA/Hercules/CGA/AT&T displays, MIDI transcription, full mouse support and options for PCX files & DeskJet emulation, and much more!

TEACH Services (518)358-2125
182 Donovan Rd, Brushton, New York 12916
BBS (518) 358-3352 (SHIPPING \$5.00 US, NY + 7% TAX)

only
\$99.95

CIRCLE 500 ON READER SERVICE CARD

Languages

Fortran Compilers

Whether you are developing new code or moving large mainframe programs to the PC, we have the Fortran Language Systems to meet your needs. Winners of PC Magazine's Editor's Choice and Technical Excellence Awards.

LAHEY COMPUTER SYSTEMS
Box 6091

Incline Village, NV 89450

800-548-4778, FAX 702-831-8123

The Mail Order Wizard

Complete management system for a catalog, inbound telemarketing, or mail order company. Order processing, inventory mgt, ad forecasting, sales/banking, list mgt, modem charge approval, EDC, UPS manifest w/scale interface. Single and Multi User Systems. Inbound/Outbound Editor's Choice.

Haven Corporation
802 Madison St., Dept W991
Evanston, IL 60202
800/782-8278, 708/869-3434

Maintenance Management

Maintenance & Inspection

An integrated maintenance management system, including parts inventory, with clients in Fortune 500 companies, utilities, hospitals, schools, manufacturing & service industries etc. The online system provides operational, planning & analytical reports such as work orders, schedules, skill & inventory requirements, budget reports & reports that summarize history of work performed.

Penguin Computer Consultants
PO Box 20485
San Jose, CA 95160
408/997-7703, Fax: 408/927-0570

Mailing Programs

Today's PC Mail System

Fast! Accurate! Large volume mailers use PostWare software programs to:

- Standardize/correct addresses
- Add ZIP, ZIP + 4, Car. Rt.
- Presort 1/2/3 Class
- Detect duplicates
- Generate Postnet bar codes
- Palletize 2/3 Class
- Qualify for postal discounts

CASS-Certified. Reported throughputs over 100,000/hr.

Postalsoft, Inc.
4439 Mormon Coulee Rd.
La Crosse, WI 54601-8231
800/831-6245

Mail Order Made Easy!

"Mail Order Master" Software contains all the routines you need to run your Home Mail Order Business. Easy to use features include Powerful Database, Invoicing, Inventory Control, UPS Manifesting, Daily Sales Report, Product Sales Report, Statements, Credit Card Voucher Printout, Bulk Mail Sort plus lots more. IBM compatible. Priced at \$499.00. Hands-On Demo \$20.00

The Marshall Weiner Corp.

1700 Catalina Ave.

Seal Beach, CA 90740

800/874-4656 USA & Canada

Medical

Medical Systems with ECS

PPM offers a complt. line of med. SW from simple ins. claims proc. to comprh. A/R mgt. PC CLAIM PLUS - claims proc. w/ECS to 100+ major ins. carriers - 30 day MB Guar.

THRESHOLD - complete A/R, Pt. Bill, comprh. practice mgt stats. **CLAIM NET** - Nationwide electrnc claims clearinghse transmits to 100+ ins. carriers. SW starts at \$459. Dealer inquiries welcome.

Physicians Practice Management
350 E. New York
Indianapolis, IN 46204
800/428-3515, 317/634-8080

\$19⁹⁵ Test Drive



Don't buy any PC MIDI products before trying the full-line from the industry leader. It's a risk-free way to learn about PC music. Apply the cost if you buy software from us.

Voyetra
Dept. PCD, 333 5th Ave
Pelham, New York 10803
(914) 738-4500 Fax: (914) 738-6946

Orders/Free Catalog: 1-800-233-9377

CIRCLE 476 ON READER SERVICE CARD

SongWright V

MUSIC PROCESSOR prints professional sheet music, songs, scores with text, chords, dynamics. Compose, edit, record, play, transcribe, copy, transpose, extract, import, publish - all in standard notation. Symbol editor/librarian. PC, MIDI or SMF entry & playback. Matrix/laser printers. \$99.95 + \$5 s/h. Free sample output. **SONGWRIT SOFTWARE**
7 Loudoun Street, S.E., Ste. 5B
Leesburg, VA 22075
1-800-877-8070, 703-777-7232

Networking

The \$25 Network

Try the 1st truly low cost LAN

- Connect 2 or 3 PCs, XTs, ATs, PS/2s
- Uses serial ports and null modem cable
- Runs at 115K baud, in only 15k of ram
- Runs in background, totally transparent
- Share any device, any file, any time
- \$25/network, Not Node! Version 2.3m

Skeptical? We make believers!



Information Modes
Drawer F, Denton, TX 76202
817-387-3339 Technical
1-800-628-7992 Orders

CIRCLE 407 ON READER SERVICE CARD

Public Domain/Shareware

ELECTRA BYTES "Best of Shareware"

Catalog on disk 2.99 + S&H refunded with first order.

Windows shareware a specialty. (Approx. 600 windows programs available)

Phone 1-800-HOT-BYTES
P.O. Box 801
Brewer, ME 04412

CIRCLE 474 ON READER SERVICE CARD



Public (software) Library

Don't even bother with other shareware vendors - PSL has a bigger, more diverse, and more current collection than anyone else... Service is excellent too.

- Computer Currents

Call for a free newsletter:

800-2424-PSL 713-524-6394

Member - ASP

CIRCLE 503 ON READER SERVICE CARD

**MOST POPULAR
IBM SHAREWARE
\$1.50 per Disk!**
Over 250 NEW Programs

FREE CATALOG
800-235-3475



**BRIGHT FUTURES
INCORPORATED**

P.O. Box 1030, East Windsor, CT 06088

CIRCLE 453 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Public Domain/ Shareware

FLAKEY JAKE'S 47¢ HITS for IBM® 5.25" or 3.5" disks

ACTIVE LIFE	DUP	MAHJONGG	POINT/SHOOT BACKUP
AMY'S FIRST PRIMER	FAMILY TIES	METZ WINDOW TOOLS	PRINT PARTNER
AS EASY AS	FORMFILL	MORAFF'S BLAST	PROCOMM
BAKER'S DOZEN	FORMGEN	NAMES AND DATES	QMODEM
BASS TOUR	GALAXY LIGHT	ORDER PRO	READABILITY PLUS
BROTHER'S KEEPER	HOME HELPER	PC BRTOWSE	RESUME SHOP
BUSINESS & HOME LEGAL	FINGER PAINT	PC CALC	RUBICON PUBLISHER
CHARTS UNLIMITED	KEY DRAW	PC FILE	SEESPELL
COMMANDER KEEN	IDEA TREE	PC WRITE	SHARESPELL
CROSSWORD CREATOR	KID GAMES	PHARAOH'S TOMB	TAKIN' CARE OF BIZ
DOS TUTOR	KINDERMATH	PIVOT	VIRUS SCAN

Get 'em while they're hot! This is our latest best selling shareware. Nobody would dare match these prices! I may be Flakey, but I'm not nuts. Tell your friends about Flakey Jake. Shipping and handling extra! Satisfaction Guaranteed. Credit cards only!

Flakey Jake's Shareware
619.931.8111 ext 511



CIRCLE 413 ON READER SERVICE CARD

FREE - 15 DISKS - FREE FULL OF SOFTWARE

TRY US! Get 15/5.25" or 6/3.5" disks of best selling NO VIRUS software for IBM Games•Utilities•Education Business•Publishing-FREE Credit Cards only!

PAY ONLY \$5.00 SHIPPING
SMC SOFTWARE PUBLISHERS
619 931-8111

CIRCLE 585 ON READER SERVICE CARD

FREE - KIDS SOFTWARE FOR IBM®

TRY US! Get 15/5.25" or 6/3.5" disks full of educational software and games - FREE! Credit cards only!



PAY ONLY \$5.00 SHIPPING
SMC SOFTWARE PUBLISHERS
619 931-8111

CIRCLE 579 ON READER SERVICE CARD

SOFTSHOPPE, INC.

ASP Member

- Selected Programs
- Latest Versions
- As Low as \$1.50

FREE CATALOG
IBM PD/SHAREWARE
POB 3678, Ann Arbor, MI 48106

Call 800-829-BEST (2378)
or 313-761-7638
Fax 313-761-7639

CIRCLE 436 ON READER SERVICE CARD

WINDOWS EXCLUSIVELY Shareware Freeware Public Domain

Disk featuring complete graphics file viewer, converter and screen capture utility for WINDOWS, and a complete catalog. Send \$ 2.00 to:

WIND-O-WARE
P.O. Box 235, Dept. WLD9
Cedarhurst, N.Y. 11516-0235

CIRCLE 575 ON READER SERVICE CARD

FREE SHAREWARE CATALOG

BUY 5 — GET 2 FREE!

100's of IBM PUBLIC DOMAIN and SHAREWARE PROGRAMS!

- LOW AS 92¢ PER DISK • VIRUS FREE
- BUY OR BORROW • LATEST VERSIONS

PHONE **800-827-8209**
FAX

**ACCESSIBLE
SOFTWARE**

509 GARDEN LN., RT. 8, E. PEORIA, IL 61611

CIRCLE 473 ON READER SERVICE CARD

Real Estate

• Property Mgt Plus/91 •

New version which looks up tenants & posts rent by Tenant Name, Prints.. Bank Deposit Slips, Rent Statements, & Automatic Checks, Reports, Late Rents, Vacancies & Expired Leases. Posts Management Fees, Pays Owners & does 1099s. Saves up to 80% of accounting time & is the EASIEST system to use!

Realty Software
133 Paseo de Granada
Redondo Beach, CA 90277
213/372-9419 or 801/649-6149

Property Managers

Easy-to-use software:

- Rental Manager — general purpose accting for apartments, storage units, etc. Built-in gen. ledger.
 - Condo Manager — for community associations. Member payments & charges. Accounting reports.
 - Resort Manager — for units rented on behalf of many owners. Timeshare, reservations, statements.
- Coleman Business Systems*
3654 Arcadian Drive
Castro Valley, CA 94546
415/581-7125

Property Management

Comprehensive software for managing residential, commercial, condos & more. Three versions: Basic PM for owner/manager-\$495, Deluxe PM for professional management-\$1,195, Multi-User with Novell network compatibility-\$2,395. Includes check writing, recurring expenses, G/L, management reporting.
Yardi Systems, Inc.
819 Reddick Street
Santa Barbara, CA 93103
805/966-3666

Property Management

Since 1978 over 7,000 users of our software have found it comprehensive, flexible & easy to use. We offer systems to manage the following types of properties: COMMERCIAL/RESIDENTIAL/CONDOMINIUM/HOME OWNERS ASSOC./MINI-STORAGE FACILITIES. For more information & sample printouts call:
Realty Automation, Inc.
11365 Eastshore Drive
Hayden Lake, ID 83835
208-772-3259

Property Management

Rental-Ease. State of the art software. Extremely fast and easy to learn and use. Everything is included: tenant tracking, repairs and maintenance, income and expense, check writing and recurring bills. No extra modules to buy. The ultimate in property management. \$695 complete. Free brochure, Demo \$10.
Strategic Office Systems
688 North 500 West #61
Mt. Pleasant, UT 84647
800/942-6784 or 801/462-2130

Security



**FIGHT
PIRACY
&
PROTECT
YOUR
PROGRAM
\$\$\$'s!**

Since 1986, companies worldwide have been choosing Az-Tech security products. If you demand the strongest protection available, why not choose one of these "proven leaders":

- EVERLOCK Copy Protection
- EVERLOCK Software Security
- EVERKEY II "The Lock"

For IBM and Compatibles.
30 day money back guarantee.
Free info and demo disk available.



Az-Tech Software, Inc.
201 East Franklin, Ste. 11
Richmond, MO 64085
(800) 227-0644 (816) 776-2700
FAX (816) 776-8398

CIRCLE 593 ON READER SERVICE CARD

CATALOG

PC WORLD

Shop The PC World Catalog for fast solutions to your PC needs.

Sports



328 NFL SYSTEMS!

OVER 1600 RECORDS 70% & BETTER!

This season input only 3 things:
Who plays who, YOUR line & final score.

If you want to be happy with your football software,
then buy the BEST.

30 day guarantee, \$89.95 - \$5.00 S/H fee, VMC

CALL TOLL FREE RIGHT NOW!

1-800-484-1088 then 1360 at tone.

CIRCLE 591 ON READER SERVICE CARD

New!

STAT
PAC
IV
GOLD

The
Standard for
Survey
& Marketing
Research
Software.

A comprehensive PC package for
questionnaire design, sampling, data
management, CRT and telephone
interviewing, statistical analyses
and presentation quality graphics.
Free brochure.

StatPac Inc.
3814 Lyndale Ave. S.
Minneapolis, MN 55409
Tel: (612) 822-8252 Fax: (612) 822-1708

Europe
Periferalia, Alken, Belgium
Tel: (32) 11 313754 Fax: (32) 11 591100

Australia
Hearne Marketing Software Pty. Ltd., Melbourne
Tel: (03) 866 1766 Fax: (03) 866 3318

CIRCLE 586 ON READER SERVICE CARD

Surveys

The Survey System

A complete, easy-to-learn package for
the entry, editing, processing &
presentation of questionnaire data.
Produces banner format crosstabs &
related tables, statistics (incl.
regression) & bar charts. Also codes &
reports open-ends. All reports are
camera-ready. CRT interviewing
options available.

Creative Research Systems
15 Lone Oak Cir., Dept. W
Petaluma, CA 94952
707/765-1001

Time Management

★ PEM ORGANIZER ★

PHONE DIRECTORY

CALENDAR

PROGRAM MENU

ONLY \$39.95

M C 1-800-443-2402 VISA

PEM Software Systems, Ltd.

CIRCLE 577 ON READER SERVICE CARD

Utilities

Ammunition to conquer your biggest problems!

without V-EMM
(640 kilobytes)



with V-EMM
(32 mega-
bytes)

• The Virtual Expanded Memory Manager
provides your EMS applications with up to
thirty-two megabytes of LIM EMS 4.0
expanded memory.

• It turns PC/AT or PS/2 ex-
tended memory into expanded
memory.

• It turns hard disk storage into
expanded memory.

• It's compatible with most EMS
applications, including 1-2-3.

• Only \$89.95. 30-day money-back guarantee.

V-EMM™

For's
P. O. Box 1295
Loveland, CO 80539
(303) 663-5629



CIRCLE 551 ON READER SERVICE CARD

Statistics

StatPlan IV

Only \$199. Easiest to use statistics
program available. Statistics include:
curve fitting, crosstabs, correlation,
multiple regression, stepwise
regression, ANOVA, t-tests, time-series
analysis, etc. Graphics with printer/
plotter output. Handles up to 30,000
data points. Interfaces directly with
Lotus and ASCII files. Demo \$10.

The Futures Group
80 Glastonbury Blvd.
Glastonbury, CT 06033
203/633-3501

NCSS 5.x Series - \$125

Easy-to-use menus & spread sheet.
Multiple regression. T-tests. ANOVA
(up to 10 factors, rep. measures,
covariance). Forecasting. Factor,
cluster & discriminant analysis.
Nonparametrics. Cross Tabulation.
Graphics: histograms, box, scatter, etc.
Reads ASCII/Lotus. Many new add-on
modules.

NCSS
329 North 1000 East
Kaysville, UT 84037
Phone: 801-546-0445
Fax: 801-546-3907

PICK THE HARDWARE CATEGORY THAT'S RIGHT FOR YOU:

Accessory Boards
Bios Chip
Cables
Computer Rental
CD-Rom
Communications/
Modems
Computer Systems
Connectivity
Disk Drives
Expansion Units
Insurance

Laptops
Memory Boards
Memory Chips
Optical
Peripherals
Plotters
Power Supplies
Printers
Security
Speed Devices
Tandy Peripherals
Tape Back-Ups

Training



Presents . . .

A User's Guide to Novell Netware

A complete video tour of the world's
most popular networking software

Runtime: 1 hour 50 minutes
75 page workbook

\$495.00

HALVERSON ASSOCIATES, INC.
1313 Newburgh Rd. • Westland, MI 48185
(313) 729-0325 • (313) 729-2424 FAX

FOR COMPLETE LISTING OF
VIDEO TRAINING PRODUCTS 1-800-537-1641

CIRCLE 520 ON READER SERVICE CARD

COPYWRITE

CopyWrite
Removes
Copy Protection.
No more diskettes,
manuals or code
wheels. \$75. U.S.
1000's of products copied.
Quaid Software Limited
45 Charles St. E. 3rd Fl. Dept. W
Toronto, Ontario M4Y 1S2
416/961-8243, FAX 416/961-6448

DOS 5 Enhancement Kit™

Improved memory management: load
high on any PC, convert extended to
expanded on a 286, disk space to
expanded, 704K low DOS memory,
more upper DOS memory on a 386,
load TSRs into expanded or extended,
sets ease-of-use standard with
automatic installation and complete
user's guide. 30-day guarantee. \$79
Biologic Corp.
7950 Blue Gray Ci.
Manassas, VA 22110-2829
703-368-2949 (703-361-8251 fax)

In-Depth

QuarkXPress In-Depth, Ready,Set,Go!/DesignStudio In-Depth, and PageMaker In-Depth are distinctive monthly journals for involved users of these versatile programs. Each journal is dedicated totally to a single desktop publishing system. Every monthly 12-page issue is a desktop publishing project in itself — focused on a new showcase application and developed using *your* specific desktop publishing system.

Discover the Secrets. You'll see not only WHAT you can do, but HOW you can do it. You'll discover tips, tricks, and shortcuts that save hours of time and produce spectacular results with your own projects. And you'll get guidelines for making your designs and layouts more professional and eye-catching.

Application-focused. Here's a sample of the applications and tips you'll find in the *In-Depth* journals:

- Anatomy of Ads
- All about Newsletters
- Brochures that Sell
- Stationery and Supplies
- Executive Reports
- The Best Desk Accessories for DTP

No Risk. If you aren't satisfied, you can get a full refund for all unmailed copies at any time.

Subscribe now. A 12-issue subscription only costs \$69, and just one or two power ideas or applications can deliver a substantial payoff from your investment. *Please take a moment to place your order now.*

Add real excitement to your desktop projects. Subscribe today!

**FOR IMMEDIATE SERVICE, CALL TOLL-FREE
1-800-343-0728 FOR CREDIT CARD ORDERS**

(in NH: 924-0100) FAX 1-603-924-9384

or simply fill out the coupon below and mail it TODAY!

YES! Here's my \$69*. Start my *In-Depth* subscription for:

- ☐ QuarkXPress ☐ PageMaker — Mac
☐ RSG/DesignStudio ☐ PageMaker — PC

Name _____
Company _____
Address _____
City/State/Zip _____
PAYMENT ENCLOSED: ☐ Check/Money Order ☐ MasterCard ☐ VISA ☐ AMEX
Card # _____ Expire Date _____
Signature _____

Create single keystrokes for your most often used commands



Figure 1: The MacroMaker main dialog.

Macro Power

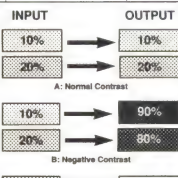
At the heart of the Macintosh's user-friendliness is its use of pull-down menus to bring the various features of a particular software package under control of the mouse. While this use of menu items is easy and quickly learned, it is not the fastest way to call up frequently used commands. Some programs allow users to access some commands with keyboard equivalents (such as the Command-S to save a document). Once the program becomes familiar, most users begin to tire of having the

are hidden. If you use an extended keyboard, you can assign one of the function keys to the job. But those of you with smaller keyboards can use another method such as one of the keypad keys or a key combination using the Command or Option keys. Be sure to use a combination not already used by RSG/DS.

It's a good idea to refrain from using the keypad keys so that when you open the Calculator desk accessory while running RSG/DS, you can use the keypad with no conflicts. If you use the keypad keys for macros, it is best to use them in combination with other keys to avoid launching a macro when you operate the Calculator.

Step by Step
To create a macro, first make sure that MacroMaker and Macros are installed in

Fine-tune pictures and add special effects



Picture Perfect!

Most DTP programs scale, stretch, rotate, and change a few attributes of graphics. RSG/DS have an entire integrated image processing utility for handling RIF and TIFF images. The graphics Image Control dialog box (Figure 2) within the Edit menu is something that many people notice, but few ever use seriously. It is contains terms and concepts that many people never find a use for. At the least they shy away from modifying graphics for fear of ruining the picture. As you will see, experimenting with the Image Control menu can be rewarding, and anything you do can always be undone.



Figure 3: Brightness Control darkens or lightens the image.

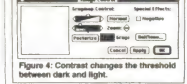


Figure 4: Contrast changes the threshold between dark and light.

10% gray, the displayed gray value of that pixel (output value) will also be 10%. An important thing to remember is that no matter what image changes you make, you

The journal for involved QuarkXPress users!

Careful planning is crucial to getting it right the first time



IN-DEPTH APPLICATION

Planning to Print

by Neil Oliveria

Desktop publishing can streamline the production process, shorten schedules, and save money. These goals are realistic, but elusive. Inadequate planning can eat up valuable time and money. In a worst case, the mismanagement of a project can deteriorate to a trial-and-error fiasco, and the printing can produce a result that is far below expectations.

This article focuses on the process and pitfalls involved with imagesetting and printing the final document. The printer referred to is the person(s) responsible for reproducing the document — either an in-house printing department or an external service bureau. We will also explore some of the advanced printing controls for color and graphics in QuarkXPress version 3.

Publish with Style

It is surprising that style sheets are not more widely used. They're easy. If you find that you are constantly switching back and forth between fonts and formats in a project, then a few minutes spent in setting up style sheets can save a lot of time and tedium. Style sheets let you group a complete set of character and formatting attributes under a single style name. Then you can apply those attributes to paragraphs by using the style name or

a special keyboard combination that you specify. For example, you can specify that the first paragraph in a story will use a drop cap, fixed leading, no indents, and a specific font and size. Whenever you start a new story, selecting the style name for first paragraph will set up the complete format with one step, ready for typing.

Style sheets are also powerful tools for making sweeping changes throughout a document. When you create a new style, you can base it on an existing style. Then, when you change the base style, all of the

continued on next page

The *In-Depth* journals are published by MindCraft Publishing Corp. Copyright 1990-1991. All rights reserved.

*Canadian subscriptions—\$74 (price includes GST). All other foreign orders—\$79. Orders must be prepaid in U.S. funds drawn on a U.S. bank.

Please make checks payable to **IDG Special Products**. Please allow 6 to 8 weeks for delivery.

M91B

QuarkXPress, Ready,Set,Go!/DesignStudio and PageMaker are registered trademarks respectively, of Quark Inc., Manhattan Graphics, LetraSet Inc., and Aldus Inc.

IDG Special Products, 80 Elm Street, Peterborough, NH 03458 Or Call, 1-800-343-0728 (inside NH: 924-0100)

ADVERTISING SALES

Richard J. Marino
Associate Publisher
Sales, Marketing, & Research

Asst. to the Associate Publisher
Colette Cornish

Bernard J. Theobald, Jr.
Vice President/Group
Advertising Director

Advertising Director for
Market Development
Jeff Edman (415/243-0500)

Western Advertising Director
Sharon Van Leuven (415/243-0500)

Eastern Advertising Manager
Bob Ostrow (508/820-0440)

Mid-Atlantic/Manhattan
John Grogan, Northeast Account
Manager (201/587-0090)

Midwest/Chicago
Mark Taussig, Midwest Account
Manager (708/827-4477)

Northern California/San
Francisco
Ellen Levin, Account Manager
(415/243-0500)

Northwest
Greg Mason, Account Manager
(415/243-0500)

San Diego/Southwest/Orange
County
Renee Callahan, Account Manager
(714/250-8081)

San Jose
Susan Simmons, Account Manager
(415/243-0500)

Southeast/Atlanta
Judy Sutter, Senior Account
Manager (404/394-0758)

Southern California/Los
Angeles
Denise Pilnak, Account Manager
(213/312-0088)

Texas
Harvey Diamond, Account Manager
(214/233-3492)

PC World Catalog
Catalog Advertising Manager
Sandie Wade
Eastern Account Manager
Duane Hampson
Catalog Coordinating Manager
Elizabeth Maffly (800/435-7760 in
California, 800/435-7766 outside
California)

PC World Action Cards
Kevin Normandeau
Telemarketing Representative
(508/820-8113)

Circulation
Vice President, Circulation
Heather Martin
Asst. to the Vice President
Anna Mercaldi

List Acquisition Manager
Francesca Davies
Circulation Promotion Manager
Ellen DiMatteo
Circulation Business Manager
Noël White
Renewal/Billing Coordinator
Jennifer Paday
Circulation Assistants
David Cobb, Jane Kratochvil
Subscriber Service
Katherine McCarthy

Single Copy Sales Director
George Clark
Single Copy Sales Rep.
Martin Garchar

Marketing & Research
Director of Marketing
Communications
Jay McSherry
Marketing Manager
Bruce Frymire
Sales Promotion Director
Nola Armijo
Research Manager
Bill Segovia
Reprints Coordinator Scott Shores
Administrative Assistant
Sandy Wong

Production
Director of Manufacturing
Linda Manes
Production Manager Laura Smith
Advertising Billing & Booking
Coordinator Kevin Octavio
Advertising Traffic Coordinator
Paul O'Neil

Administration
Director of Finance Vicki Peilen
Human Resources Director
Richard Willoughby

Asst. to the Publisher
Kelly Milan
Director of Information Services
Walter J. Clegg
Corporate Business Manager
Christina Spence
Accounting/Operations Manager
Pat Murphy
Accounting/Facilities Manager
Michelle Reyes
Financial Analyst
Madeleine Buckingham
Human Resources Administrator
Thalia Ohara
Human Resources Assistant
Maria Chico

ADVERTISER INDEX A TO Z

Get more information—circle the
appropriate number on the read-
er service card.

Reader Service Number	Page Number
3	Acer America 53
20	Advanced Computer Products 306
11	Advanced Vision Research . . . 260
45	American Power Conversion . . . 64
306	American Small Business Computers 127
—	Anthro Corp 22
8	Arlington Computer Products 307
18	Artisoft 14
9	Ashton Tate 74-75
43	ASP Computer Products 52
10	AST Research 143
14	Austin Computer Systems 12-13
99	Autodesk 207
12	Automap 38
1	Blackship Computer Systems 309
16	Borland 37
215	Buffalo Products, Inc. 85
17	Caere Corp. 33
52	Central Point 54-55, 264
91	Citizen America 259
36	Clarion Software 50
—	Compaq Computer Corp. 122-123
—	CompuAdd 61-63
42	Computer Associates 76
39	Computer Associates 124

Reader Service Number	Page Number
26	Computer Associates 251
44	Computer Buyers Club . . . 298-301
200	Computer Discount Warehouse 304-305
19	CONNEXperts 107
48	Corel Systems Corp. 48
—	Curtis 7
194	Datapro 273
280	Datastorm Technologies 116
75	Dell Computer Corp. 168-169
74	Dell Computer Corp. C5-C8
61	Delrina Technology 28
82	Eikon Systems 167
69	Everex 4-5
80	ExecuTrain 215-217
100	Fast Micro 312-315
81	Fifth Generation Systems 71
71	Fifth Generation Systems 73
78	First Source International 274
148	Funk Software 26
—	Gateway 2000 17-20
—	Genstar Rental Electronics . . . 70
122	Group 1 Software, Inc. 272
79	Haventree Software Ltd. 56
114	Hewlett Packard 24-25
—	Hewlett Packard 87
90	Hewlett Packard 244-245
—	IBM 8-9, 196-197
97	IBM 82
109	Intel 80-81
118	Jetfax, Inc. 30
142	Kelly Services 221
41	Kenosha Computer Center . . . 310
—	L A Trade 302
123	Laser Press & Graphics 316
128	Liberty Systems 6
135	Lotus Books/Brady 250
—	Lotus Development Corp. 156-157, 161-163
—	MacFriends 190
217	Merritt Computer Products 182
—	Micro Logic Corporation 39
168	MicroBiz Corp. 319
179	Micrografx 139
183	Micrografx 141
167	MicroProse 256
—	Microsoft C2-P1, 144-145
157	MicroTac Software 36
164	Microtek 102-103
176	Minuteman Computer 318
172	MIS Computer Systems 311
7	M-USA Business Systems . . . 236
185	National Videotex 78

PC World is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes more than 130 computer publications in more than 40 countries. Nineteen million people read one or more International Data Group publications each month. International Data Group's publications include: ARGENTINA's Computerworld Argentina; ASIA's Asian Computerworld; AUSTRALIA's Australian Macworld, Australian PC World, Computerworld Australia; AUSTRIA's Computerwelt Österreich; BRAZIL's DataNews, PC Mundo; CANADA's ComputerData; CHILE's Computacion Personal, Informática; COLOMBIA's Computerworld Colombia; DENMARK's CAD/CAM World, Computerworld Danmark, Macworld Danmark, PC World Danmark, Unix World; FINLAND's Mikro PC, Tietoviikko; FRANCE's Distributique, Info PC, Le Monde Informatique, Télécoms International; HUNGARY's Computerworld SZT, Mikrovilág; INDIA's Computers & Communications; ISRAEL's People & Computers Weekly; ITALY's Computerworld Italia, PC World Italia; JAPAN's ComputerWorld Japan, InfoWorld, Publish; KOREA's Hi-Tech Information/Computerworld; MEXICO's Computerworld Mexico, PC Journal; THE NETHERLANDS' Amiga World, Computerworld Netherlands, PC World Benelux; NEW ZEALAND's Computerworld New Zealand, PC World New Zealand; NIGERIA's PC World Africa; NORWAY's Computerworld Norge, Macworld Norge, PC World Norge; PEOPLE'S REPUBLIC OF CHINA's China Computerworld, China Computerworld Monthly; POLAND's Computers; SPAIN's Amiga World, CIMWorld, Computerworld España, Comunicaciones World, PC World España; SWEDEN's Computer Sweden, Mac World, MikroDatorn, PC/Nyheterna, Svenska PC World; SWITZERLAND's Computerworld Schweiz; TAIWAN's Computerworld Taiwan, PC World Taiwan; UNITED KINGDOM's Graduate Computerworld, ICL Today, Lotus, Macworld, PC Business World; UNITED STATES' AmigaWorld, CIO, Computerworld, Digital NEWS, Federal Computer Week, GamePro, inCider/A+, InfoWorld, International Custom Publishing, Macworld, Network World, PCGames, PC World, Portable Computing, Publish, Run, Sun Tech Journal; USSR's Manager, Network, PC Express, PC World USSR; VENEZUELA's Computerworld Venezuela, Micro Computerworld; WEST GERMANY's Amiga Welt, Computerwoche, Information Management, Macwelt, PC Welt, PC Woche.

Reader Service Number	Page Number
187 NEC Technologies	34-35
2 Nobel, Inc.	100
197 Okidata	66-67
209 One Stop Micro	308
— Pacific Data Products	68
231 Panasonic	164
220 Paradise Computer Products	303
233 Patton & Patton Software	72
198 PC Brand	109-114, 254-255
— PC Connection	200-205
144 Peachtree Software	58-59
202 QMS	146
238 Quantum Computer Services	239-240
170 Que Software	118-119
227 Reasonable Solutions	317
— Reference Software	208-209
239 Rose Electronics	183
251 Samsung	29
265 Samsung	211
31 Secure-It	182
273 Selective Software	108
— Software Publishing Corp.	10, 31, 267
258 SourceMate	32
253 SPSS, Inc.	77
272 Symantec	23
266 Symantec/Norton Utilities	148-149
271 Symantec	170
275 Tandon Corp.	40-47
296 Texas Instruments	51
264 Texas Instruments	184-186
49 The Computer Book Club	253
259 Tiger Software	90-99
285 Toshiba	234-235
307 Valitek	60
299 Vitesse, Inc.	104
325 Western Telematic	120
— WordPerfect Corp.	180-181
290 Zenith Data Systems	224-225
— Zeos International, Ltd.	129-136
320 ZSoft Corp.	57

ADVERTISER INDEX BY PRODUCT CATEGORY

Get more information—circle the appropriate number on the reader service card.

Reader Service Number	Page Number
HARDWARE	
Communications	
118 Jetfax, Inc.	30
Computers	
3 Acer America	53
10 AST Research	143
14 Austin Computer Systems	12-13
1 Blackship Computer Systems	309

Reader Service Number	Page Number
— Compaq Computer Corp.	122-123
— CompuAdd	61-63
74 Dell Computer Corp.	C5-C8
69 Everex	4-5
100 Fast Micro	312-315
— Gateway 2000	17-20
— Genstar Rental Electronics	70
— IBM	8-9, 196-197
109 Intel	80-81
— MacFriends	190
172 MIS Computer Systems	311
2 Nobel, Inc.	100
198 PC Brand	109-114, 254-255
275 Tandon Corp.	40-47
264 Texas Instruments	184-186
Connectivity	
43 ASP Computer Products	52
215 Buffalo Products, Inc.	85
19 CONNEXperts	107
239 Rose Electronics	183
325 Western Telematic	120
Desktop Publishing	
123 Laser Press & Graphics	316
— Pacific Data Products	68
Laptop/Notebook	
14 Austin Computer Systems	12-13
91 Citizen America	259
75 Dell Computer Corp.	168-169
90 Hewlett Packard	244-245
251 Samsung	29
264 Texas Instruments	184-186
285 Toshiba	234-235
290 Zenith Data Systems	224-225
— Zeos International, Ltd.	129-136
Local Area Networks	
18 Artisoft	14
215 Buffalo Products, Inc.	85
19 CONNEXperts	107
239 Rose Electronics	183
325 Western Telematic	120
Monitors	
265 Samsung	211
Power/Protection	
45 American Power Conversion	64
Printers/Plotters	
114 Hewlett Packard	24-25
187 NEC Technologies	34-35
197 Okidata	66-67
231 Panasonic	164
202 QMS	146
296 Texas Instruments	51
Scanners/Digitizers	
11 Advanced Vision Research	260
164 Microtek	102-103
Storage Devices	
128 Liberty Systems	6
307 Valitek	60
Systems	
2 Nobel, Inc.	100
SOFTWARE	
Accounting/Financial	

Reader Service Number	Page Number
42 Computer Associates	76
97 IBM	82
7 M-USA Business Systems	236
144 Peachtree Software	58-59
CAD/CAM	
306 American Small Business Computers	127
Communications	
280 Datastorm Technologies	116
185 National Videotex	78
— WordPerfect Corp.	180-181
Database Management	
36 Clarion Software	50
122 Group 1 Software, Inc.	272
Desktop Mapping	
— Software Publishing Corp.	10
Desktop Publishing	
320 ZSoft Corp.	57
Education	
12 Automap	38
Entertainment	
167 MicroProse	256
Graphics	
306 American Small Business Computers	127
9 Ashton Tate	74-75
99 Autodesk	207
48 Corel Systems Corp.	48
179 Micrografx	139
183 Micrografx	141
— Software Publishing Corp.	267
320 ZSoft Corp.	57
Integrated Software	
— Hewlett Packard	87
Management	
— Micro Logic Corporation	39
168 MicroBiz Corp.	319
258 SourceMate	32
Optical Character Recognition	
11 Advanced Vision Research	260
17 Caere Corp.	33
Project Management	
39 Computer Associates	124
79 Haventree Software Ltd.	56
233 Patton & Patton Software	72
272 Symantec	23
Shareware	
227 Reasonable Solutions	317
Spreadsheets/Templates/Forms	
16 Borland	37
26 Computer Associates	251
— Lotus Development Corp.	156-157
Statistics	
253 SPSS, Inc.	77
Utilities	
52 Central Point	54-55, 264
82 Eikon Systems	167
71 Fifth Generation Systems	73
81 Fifth Generation Systems	71
148 Funk Software	26
122 Group 1 Software, Inc.	272
273 Selective Software	108

Reader Service Number	Page Number
266 Symantec/Norton Utilities	148-149
299 Vitesse, Inc.	104
Windows	
48 Corel Systems Corp.	48
61 Delrina Technology	28
— Lotus Development Corp.	156-157, 161-163
179 Micrografx	139
183 Micrografx	141
— Microsoft	C2-P1
299 Vitesse, Inc.	104
Word Processing/Aids	
— Lotus Development Corp.	161-163
— Microsoft	144-145
157 MicroTac Software	36
170 Que Software	118-119
— Reference Software	208-209
— Software Publishing Corp.	31
271 Symantec	170
MISCELLANEOUS	
Computer Accessories	
— Anthro Corp.	22
— Curtis	7
217 Merritt Computer Products	182
Mail Order	
20 Advanced Computer Products	306
8 Arlington Computer Products	307
44 Computer Buyers Club	298-301
200 Computer Discount Warehouse	304-305
78 First Source International	274
— Gateway 2000	17-20
41 Kenosha Computer Center	310
— L A Trade	302
123 Laser Press & Graphics	316
168 MicroBiz Corp.	319
176 Minuteman Computer	318
209 One Stop Micro	308
220 Paradise Computer	303
— PC Connection	200-205
227 Reasonable Solutions	317
259 Tiger Software	90-99
— Zeos International, Ltd.	129-136
On-Line Services	
238 Quantum Computer Services	239-240
Organizations	
49 The Computer Book Club	253
Other	
— Genstar Rental Electronics	70
142 Kelly Services	221
Periodicals/Subscriptions	
194 Datapro	273
135 Lotus Books/Brady	250
49 The Computer Book Club	253
Security	
31 Secure-It	182
Training	
80 ExecuTrain	215-217

PRODUCTS FEATURED IN EDITORIAL

Get more information—circle the appropriate number on the reader service card.

Reader Service Number Page Number

Accounting

- 650 Client Write-Up; Peachtree Network Accounting; Peachtree Software. 137
- 659 Solomon III 7.0, Solomon Software. 147

Add-On Board

- 658 16/4 Pocket Token Ring Adapter; Xircor. 147

Communications

- 666 cc:Mail for MS-DOS 3.2, cc:Mail for Windows 1.0; cc:Mail. 192
- 667 The Coordinator II 2.10, Action Technologies. 198
- 668 Da Vinci eMail for DOS 1.7, eMail for Windows 1.8; Da Vinci Systems. 198
- 669 Higgins 2.4, Enable Software/Higgins Group. 206
- 670 Inbox Plus for DOS 3.0, Sitka. 206
- 671 Microsoft Mail for PC Networks 2.1, Microsoft. 208
- 672 WordPerfect Office 3.0, WordPerfect. 208

Reader Service Number Page Number

Computer System

- 674 3125 Notepad, NCR. 121
- 612 AST Premium Exec 286, AST Research. 158
- 613 A-Tronic SuperLite 286/16, A-Tronic Computer. 158
- 614 Austin 286/12, Austin Computer Systems. 158
- 615 Commax NT 286, Commax Technologies. 158
- 604 Compaq LTE/286, Compaq Computer. 152
- 616 CompuAdd Companion, CompuAdd. 158
- 617 Core Pacific Ortho LP-286N, Core Pacific Electronics. 158
- 618 Dauphin 1000 Lapbook, Dauphin Technology. 158
- 605 Dell System 212N, Dell Computer. 152
- 606 Grid 1720, Grid Systems. 152
- 695 IBM PS/2 Models 35, 40, 57; IBM. 105
- 619 Librex 286, Librex Computer Systems. 158
- 620 Magnavox Metalis/286, Magnavox. 158
- 621 Mitsuba Ninja Notebook 286, Mitsuba. 158
- 622 Modern Computer NoteStar 902, Modern Computer. 158
- 607 NEC Ultralite 286F, NEC Technologies. 153
- 623 Ogivar Internote 286, Ogivar Technologies. 158

Reader Service Number Page Number

- 624 Olivetti Notebook A12, V16; Olivetti Office USA. 158
- 625 Packard Bell PB286NB, Packard Bell Electronics. 158
- 608 Panasonic Business Partner 270, Panasonic Communications. 155
- 626 Sanyo MBC-17NB, Sanyo Business Systems. 158
- 637 Sharp PC-6220, Sharp Electronics. 158
- 609 Tandy 2810 HD, Tandy. 159
- 627 TI TravelMate 2000, Texas Instruments. 158
- 610 Toshiba T1200XE, T2000; Toshiba America. 160
- 628 TRAC 286 Notebook, TRAC Int'l. 158
- 629 Trans PC LT 2100, Trans PC Systems. 158
- 630 Zenith MastersPort 286, Zenith Data Systems. 158
- 644 Zenith MastersPorts, SupersPorts; Zenith Data Systems. 126
- 611 Zeos Notebook 286, Zeos Int'l. 165

Data Base Management

- 654 DataPerfect 2.2, WordPerfect. 147
- 660 Superbase 4 1.3, Superbase SQL Library; Precision. 147

Desktop Publishing

- 643 Publish It 2.0, Timeworks. 138

Development Tool

- 647 ProKey for Windows, RoseSoft. 140

Reader Service Number Page Number

Fax

- 646 OmniLink/Laser; Technology Concepts. 128

Graphics

- 661 ArtRight Image Portfolios, ArtRight Software. 252
- 642 Hollywood, IBM Desktop Software. 128
- 662 Images with Impact, 3G Graphics. 252

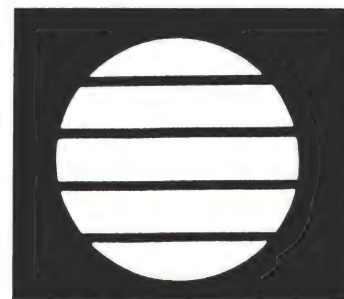
Language

- 675 Microsoft Visual Basic, Microsoft. 262

Modem

- 716 2400ETC.E, ATI Technologies. 230
- 697 2400ETC.I, ATI Technologies. 232
- 708 2400HB, 2400i+; OmniTel. 232
- 733 2400PA Model 2, 2400VP, VI2422PA; Racal-Vadic. 230
- 737 2400 Plus II, Ven-Tel. 230
- 730 2400SD, 2400s+; OmniTel. 230
- 699 2450MNP; Cardinal. 232
- 720 624 Modem, 2424ADH Plus, 2424AMH Plus; Datatrek. 230
- 736 Courier 2400e, Sportster 2400, Sportster 2400 MNP; U.S. Robotics. 230
- 721 Evercom 24E, Evercom 24E+; Everex. 230
- 701 Evercom 24, Evercom 24+; Everex. 232
- 722 FDX 2448, FastComm Communications. 230

Save Your Copies of PC WORLD



Now there's an easy way to keep copies of *PC World* readily available for future reference. *PC World's* sturdy and practical file cases are designed to keep your copies in top condition and at your fingertips. Each file case holds up to six valuable issues of *PC World*. The rich maroon leatherette and gold leaf embossed lettering make these file cases attractive additions to your bookshelf at home or in your office. Start organizing your reference library today for only \$7.95 for one file, \$14.95 for two files, or \$27.95 for four files (PA residents add 6% sales tax). Please add \$1 per case for shipping and handling. Enclose your check made payable to Jesse Jones Industries and send to :

Jesse Jones Industries
Dept. PCW
499 East Erie Avenue
Philadelphia, PA 19134

Or call toll-free 7 days, 24 hours 1-800-825-6690. Charge orders (minimum \$15) accepted. Please note that delivery cannot be made to P.O. Boxes. Please allow 4-6 weeks for delivery.

Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Number
700 Full-Pak #24M, Half-Pak #24; Datatrek	232	703 SM-24HV, GVC Technologies.	232	693 Rose Electronics	226	680 Quattro Pro 3.0, Borland Int'l	178
711 LC2400PC, Racal-Vadic	232	724 SM-24V, GVC Technologies.	230	694 Western Telematic	226	681 SuperCalc5.0c, Computer Associates Int'l	182
719 Lightspeed 2400LE, Computer Friends.	230	698 Smart One 2400B, Best Data Products.	232	692 Pacific Data Products	226	682 Wingz 1.1A, Informix Software.	183
718 MB 2400EX, 2400MNP, 2400 V42; Cardinal	230	717 Smart One 2400X, Smart One 2400XMNP; Best Data Products.	230	688 Digital Products	226		
699 MB2450, Cardinal	232			690 Fifth Generation Systems.	226		
641 MicroPorte 1042, Microcom.	142	725 Smartmodem 2400, V-series Smartmodem 2400; Hayes Microcomputer Products	230	687 Buffalo Products	226		
707 MultiModem 224EC7B, Multi-Tech Systems	232					Spreadsheet Utility	
728 MultiModem 224E, MultiModem 224E7; Multi-Tech Systems	230	645 SpeedModem Champ, CompuCom	138			639 @Mail, Beyond	126
706 MV22i, Microgate	232	712 SupraModem 2400i, SupraModem 2400i MNP, SupraModem 2400i Plus; Supra	232	Printer			
729 N2431E, NEC	230	734 SupraModem 2400, 2400 Plus, 2400 MNP; Supra	230	631 Axonix LiteWrite, Axonix.	166	Utility	
715 PCM2400E, Ven-Tel	232	713 T-NET 24I, Telenetics	232	632 Canon BJ-10e, Canon USA.	166	683 Adobe Type Manager, Adobe Systems	49
723 Pioneer V.22bis/V.42bis, Galaxy Networks	230	735 T-NET 24X, TC921S-24; Telenetics	230	633 CP+ WsP-200, Computer Products Plus	166	656 BeckerTools V2 Plus, Abacus	147
709 PM2400, PM2400 V42bis; Practical Peripherals.	232	704 V-series Smartmodem 2400B V42, x.25; Hayes Microcomputer Products.	232	634 Kodak Diconix 150 Plus, Eastman Kodak.	166	684 Disk Manager, Ontrack Computer Systems	52
731 PPM 2400 Pocket Modem, PM 2400SA, PM 2400SA V42bis; Practical Peripherals.	230	739 Zoom/Modem HC2400R, Zoom Telephonics.	232	635 Mannesmann Tally MT 735, Mannesmann Tally	167	665 HyperDisk V4.20, HyperWare	320
710 ProModem 2400B, 2400B Plus; Prometheus Products	232	738 Zoom/Modem MX2400R, V42bis; Zoom Telephonics	230	636 Seikosha LT-20, Seikosha America	167	651 Network H.Q., Magee Enterprises	142
732 ProModem 2400G, 2400 Mini, 2400 Plus; Prometheus Products	230			673 Tektronix Phaser Jet PXi, Tektronix	115	685 NoBlink, Instant Replay	60
705 Quicktel 2400 H, Quicktel V.22bis/V.42bis; Logicode Technology	232	On-Line Service		640 WinPrinter 400, LaserMaster	125	676 Norton Desktop for Windows 1.0, Symantec.	117
726 Quicktel 2400EX, Logicode Technology.	230	602 Delphi, General Videotex	261	Printer Utility		663 Norton Utilities 6.0, Symantec.	320
727 QX/2400t, Microcom.	230	603 PaperChase, PaperChase	262	601 Micrografx PostScript Driver 2.6, Micrografx.	258	686 No-Squint II, SkiSoft Publishing	60
		Other Peripheral		Scanning Software		655 PC-Kwik Power Disk 1.1, Multisoft	147
		689 Extended Systems.	226	652 Image-In-Color, Image-In.	137	664 PC-Kwik Power Pak, Multisoft	320
		691 Laserplex.	226	Spreadsheet		653 RSE Variety Pak, RSE Shareware	140
				677 1-2-3 2.3, Lotus Development	172	638 Windows 3.0 Resource Kit, Microsoft	237
				678 1-2-3 3.1+, Lotus Development	177		
				679 Excel 3.0, Microsoft.	177		

PC WORLD

WHAT'S NEW?

The PC World Instant Reference Card

WHAT'S NEXT?

A new card every month

You've Seen Them – there's one in each issue. These guides give you quick answers to common questions about DOS, 1-2-3, WordPerfect, and all the other applications you use daily.

And We Know You'll Want to Save Them – Tear out the Instant Reference Card each month and keep them clean, neatly organized, and accessible with *PC World's* Instant Reference Portfolio. Custom-designed to hold a year's worth of cards, this handy portfolio could become the most valuable item on your desktop – after your PC, of course.

\$24.95 Shipping Included
Call 1-800-395-5763
TO ORDER TODAY!

FREE PRODUCT INFORMATION

PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME

COMPANY

ADDRESS

CITY

STATE

ZIP (required)

TITLE

PHONE ()

INFORMATION FROM ADVERTISERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350										

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600

☐

Check this box for your subscription to *PC WORLD*. You will be billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950										

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962

September 1991

Expires 1/09/92

N1

Free Product Information

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

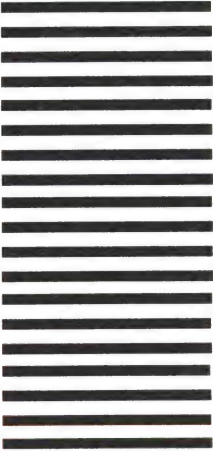
POSTAGE WILL BE PAID BY ADDRESSEE



Product Information Center
P.O. Box 5330
Pittsfield, MA 01203-9871



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



Free Product
Information

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

PC WORLD

Product Information Center

P.O. Box 5330

Pittsfield, MA 01203-9871



FREE PRODUCT INFORMATION
PC WORLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

NAME

COMPANY

ADDRESS

CITY

STATE

ZIP (required)

TITLE

PHONE ()

INFORMATION FROM ADVERTISERS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140
141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160
161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180
181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200
201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220
221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240
241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260
261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280
281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300
301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320
321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340
341 342 343 344 345 346 347 348 349 350

CATALOG SECTION

401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420
421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440
441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460
461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480
481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500
501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520
521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540
541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560
561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580
581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600

☐ Check this box for your subscription to PC WORLD. You will be billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620
621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640
641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660
661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680
681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700
701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720
721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740
741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760
761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780
781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800
801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820
821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840
841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860
861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880
881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900

PRODUCT CATEGORY INFORMATION

For Information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920
921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940
941 942 943 944 945 946 947 948 949 950

Advertised Products

Computers	951	Network Products	957
Data Management (PIMs)	952	Operating Environments	958
Desktop Pub./Graphic Software	953	Printers	959
Financial/Accounting	954	Scanners	960
Memory Boards	955	Video Boards	961
Monitors	956	Word Processing	962



PC WORLD MAIL ORDER Shopping Guide

*Buy with
Convenience*

*Buy with
Confidence*

JOIN THE COMPUTER BUYER'S CLUB™



The Most Complete Forms Software for Windows!

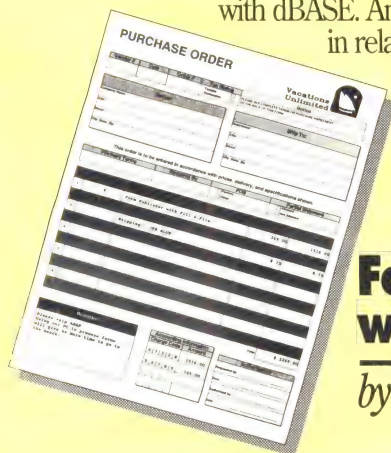
Form Publisher with Fill & File combines forms design, forms fill in, and database management all in one complete package. Get the forms you want the way you want them

quickly and easily. Unique "object-oriented" design tools let you create professional quality forms fast. Just piece together ready-made form parts like address labels, lists, and grids. Powerful test features allow you to place text of any type style or size anywhere on your form. Advanced graphics and scanning features let you add logos and signatures to your form. You can even generate bar codes.

You may never again have to design your own forms from scratch, because the forms you need may already be included in Forms-on-Demand (FOND)™. Included with Form Publisher with Fill & File, FOND™ is a collection of over 600 useful forms on disk, ready for you to print or modify with the click of a mouse.

Fill in the forms you create with Form Publisher or any pre-printed form you already have. You simply tab from blank to blank and type in your information. Even better, use multiple data files simultaneously to enter information for you. For example, type in a part number and the description and price will automatically be entered. There are also many validation and math features to guarantee accurate completion of your forms. Best of all, your information is being stored to a standard database file that's directly read/write compatible with dBASE. And with many powerful built-

in relational database management features, you'll be able to manage your data more conveniently than ever before!



Form Publisher with Fill & File

by FormWorx

LIST: \$195
CLUB: \$109 MEMBERS ONLY

MAX Finds Additional Memory When You Need it Most

Running Windows, TSRs, LANs, even Lotus stretches the limits of your machine's memory. 386MAX and BlueMAX automatically free up space to run big applications by relocating memory-resident software into unused regions of address space in high DOS. MAX intelligently calculates the thousands of ways to put your network shells, pop-up utilities and device drivers into high DOS, and then arranges them for the best possible fit.

386MAX serves 386 and 486 machines, while BlueMAX serves 386- and 486-based PS/2 systems. BlueMAX recovers an additional 80-84K of contiguous high DOS memory space using exclusive BIOS compression technology. Order MAX now and we'll include a copy of ASQ, Qualitas' memory management tutorial and system analyzer, free of charge!

386MAX BlueMAX

by Qualitas

386MAX/BlueMAX

LIST: \$130/\$155
CLUB: \$65/\$78

MEMBERS ONLY



Create Flow-Charts, Data-Flow Diagrams, and Organization Charts..With Ease!

In any business there are processes and procedures that must be documented.

EasyFlow is a powerful program dedicated to the fast creation of flowcharts, data-flow diagrams and organization charts. EasyFlow 7.0 offers full-color support, global search and replace, automatic line routing, 3-D charting, and supports Novell as well as over 270 output devices.

EasyFlow's wide range of supported products allows for easy integration of charts into larger documentation. Alternate shape libraries for accounting diagrams, networking diagrams, and fault-tree diagrams expand the usefulness of the program and are also available.

EasyFlow

by HavenTree



LIST: \$230
CLUB: \$162 MEMBERS ONLY

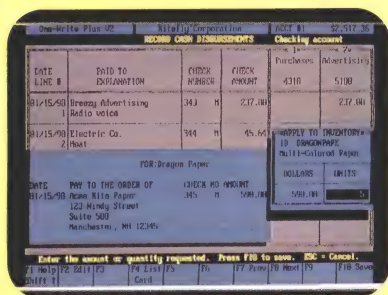
SAVE MONEY, SAVE THE COMPUTER BUYER'S

The Accounting System That's as Easy as Writing a Check

With One-Write Plus, a full-featured accounting system from Great American Software, you'll be billing customers faster, collecting receivables sooner, balancing budgets better and producing more meaningful financial reports. There are no accounting terms to learn...and it practically installs itself!

Easily the most complete accounting package in its price range, One-Write Plus gives you everything you need for fast, easy accounting. General Ledger with Checks and Receipts, Accounts Receivable with Invoicing, and Accounts Payable. And they're all connected, so every time you write a check, send an invoice or receive a payment, all other parts of the program are updated automatically.

Because One-Write Plus is based on the one-write manual system, you probably already are well on your way to mastering this complete system. You can easily track up to



5,000 customer and vendor records. Take advantage of discounts. Pay who you want, when you want. Hold onto more of your money longer. Improve cash flow.

With every One-Write Plus package you get SuperTrack, a strategic tracking and reporting system that fits your business. This customizable tracking feature allows you to track income, commissions, expenses, inventory, projects and more. Included at no extra charge, SuperTrack helps you make sense of your business.



one-write plus

by Great American Software

LIST: \$299
CLUB: \$119* MEMBERS ONLY

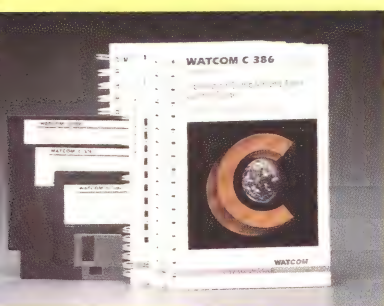
*With \$50 Mfrs Rebate Coupon!

Unleash 386 Power on Your Microsoft C Code with WATCOM C8.0/386!

WATCOM's C compilers for 386 Extended DOS has won high praise from industry's experts. According to *Computer Language*, "WATCOM is definitely the leader in object-level optimization...for flat-out speed WATCOM C showed shining performance."

"If You're Writing Applications in Microsoft C, You'll Love

This Compiler!" That's how J. Richard Hines described WATCOM C/386 in *Electronic Test* magazine. WATCOM C8.0/386 offers interactive source-level debugger, generates high-performance code for 32-bit protected mode, and is 100% ANSI C and SAA compatible.



WATCOM C8.0/386

by WATCOM

LIST: \$1295
CLUB: \$975 MEMBERS ONLY

WHAT IS THE COMPUTER BUYER'S CLUB?

The Computer Buyer's Club offers members an incredible selection of PC products at wholesale prices. We don't mark up prices. Club members get the same low prices that a reseller gets. And if we don't have it at the lowest price we'll tell you who does. Join the Computer Buyer's Club now and enjoy wholesale prices today!

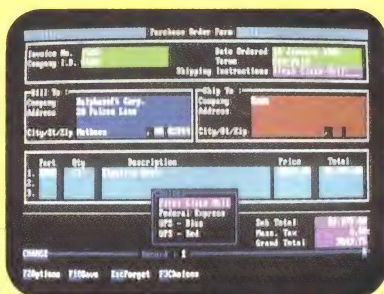
**TIME, SAVE THIS AD.
CLUB™ HAS THE LOWEST PRICES. ANYWHERE.**

Circle 44 on reader service card

IF YOU'RE BUYING IT SOMEWHERE ELSE, YOU'RE JOIN THE COMPUTER BUYER'S CLUB.™ CALL 1-800-

\$450 OFF!

Develop Database Applications in Minutes... For Just \$99

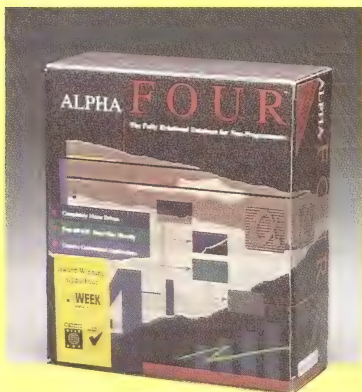


Creating custom database applications is an intimidating task to most users. But sooner or later every user discovers the overwhelming need to tap into the potential of a powerful database system. With Alpha FOUR users at every skill level can develop applications in minutes.

The key to Alpha FOUR's ease of use is its menu-driven interface, arranged in an intuitive and logical manner. Alpha FOUR lets you create custom help screens and lookup tables so that data entry is a breeze. You can design custom forms, reports and labels with a WYSIWYG (what you see is what you get) layout editor. And Alpha FOUR's report writer helps you produce sophisticated reports everyone can understand.

Because Alpha FOUR is a relational database, you have the power to link up to 10 related databases in a relational set. Each database in the set can have multiple relationships and automatically handle one-to-many links. With sets, you can solve any data management problem easily.

Alpha FOUR uses the identical file structure as dBase and FoxBase, and imports/exports a multitude of other formats, such as Lotus 1-2-3. Sharing data is a snap! Imagine a non-programmer writing custom database applications that read, link and report dBase files! Become the database expert you always wanted to be with Alpha FOUR.



Alpha FOUR by Alpha Software

LIST: \$549
CLUB: \$99* MEMBERS ONLY

*This is a competitive upgrade offer. To qualify you must have any database software, integrated package, mail list manager or spreadsheet used as a data manager. Call for complete list of packages that qualify you for this upgrade. Regular Club price is just \$295.

.RTPatch Lets You Update Any Type of Software File by Sending Only the Changes

Updating files or systems to new versions of a program takes time. Instead of replacing whole programs or systems, .RTPatch updates files or entire systems by sending *only* the changes. By comparing the old version of a file (or set of files) to the new version, .RTPatch creates a small patch file that contains just the differences. This patch file is then sent to the end user to change their old version into the new one... quickly and easily.

Patches typically are very small and therefore use a minimum of disk media or bulletin board time. Patches are also very easy to create and apply, thus taking the hassle out of updating. Also, by posting patches on public bulletin boards you don't have to fear theft, since the patch is useless if the user doesn't have an original copy of the program.

.RTPatch works with MS-DOS, OS/2 and Windows, and comes with a full 45-day, no-risk, money-back guarantee direct from PocketSoft.



.RTPatch by PocketSoft

LIST: \$495
CLUB: \$295 MEMBERS ONLY

THE COMPUTER BUYER'S CLUB MEMBERSHIP GUARANTEE

If you are dissatisfied for any reason, your membership dues will be completely refunded within the first 90 days. No questions asked.

**1
800
732-3396**

GET A **FREE** TRIAL MEMBERSHIP

Computer Buyer's Club
70 Walnut Street
Wellesley, MA 02181.

- Visa, Mastercard and AMEX accepted.
- Your credit card will not be charged until your order is shipped.
- Purchase orders subject to credit approval.
- All sales final. Defective software replaced immediately. Returns subject to restocking fee.
- MA residents add 5% sales tax.
- Item availability and price subject to change without notice.
- \$35 annual membership fee. International memberships available.
- \$11 shipping and handling charge on all orders within continental US. Call for express and international freight charges.
- Actual freight charges apply for hardware.
- COD - \$5 per order.
- Please indicate disk size.
- © 1991, Computer Buyer's Club Inc.

**PAYING TOO MUCH.
732-3396 TODAY!**



**Club Members Always
Get It At Wholesale Prices**

LIST CLUB

Pagemaker 4.0/Win	795	468
dBase IV	795	452
Toolbook	395	279
Paradox 3.5	795	459
CorelDRAW 2.0	695	368
Procomm Plus 2.0	119	59
Fastback Plus	189	165
IBM Current	395	212
Lotus 1-2-3 3.1	595	390
Excel for Windows	495	285
MS Compiler 6.0	495	285
Word for Windows	495	285
Clipper 5.0	795	468
QEMM 386 5.11	100	55
Norton Utilities 5.0	179	105
WordPerfect 5.1	495	237

CLUB MEMBERSHIP BENEFITS:

1. Low wholesale prices - the same prices that a computer reseller gets without the retail markup.
2. **FREE**, unlimited access to the Computer Buyer's Club's state-of-the-art *PriceLine* shopping database. We track the prices of over 500 of the most popular PC products.
3. 24 hour/day automated ordering service.
4. **FREE** pricing information available via fax or Compuserve.
5. **FREE** directory of over 5,000 hardware and software products.
6. **FREE** demo programs.
7. **FREE** discount coupons to software, magazines, journals, newsletters, training seminars, trade shows, and more!
8. **FREE** *HotSheet* of competitive upgrades, special offers and discounted products mailed to members throughout the year.
9. A money-back guarantee if you are not satisfied with the Club at anytime within the first 90 days. No questions asked!

**9 REASONS TO
JOIN THE COMPUTER
BUYER'S CLUB™**

Circle 44 on reader service card

PC WORLD

**WHAT'S NEW?
The PC World Instant
Reference Card**

**WHAT'S NEXT?
A new card every month**

You've Seen Them - just inside the back cover. These guides give you quick answers to common questions about DOS, 1-2-3, WordPerfect, and all the other applications you use daily.

And We Know You'll Want to Save Them - Tear out the Instant Reference Card each month and keep them clean, neatly organized, and accessible with *PC World's* Instant Reference Portfolio. Custom-designed to hold a year's worth of cards, this handy portfolio could become the most valuable item on your desktop - after your PC, of course.

\$24.95 Shipping Included
Call 1-800-395-5763
TO ORDER TODAY!

PC WORLD

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

MEMORY

NO SURCHARGE
FOR MC, VISA & DISCOVER

★★ CALL TOLL-FREE 800-433-3726 ★★

★ SOFTWARE BLOWOUT ★

Wordstar 6.0 • Rev C • \$99
Wordstar 2000 3.5 • Rev A • \$99

TURBO 25

Gives You 150 Fonts
for H.P. Laser Printer
\$119.00

INTEL 8087-3

\$59.00

Individual D-RAM Chips

MEMORY FOR IBM & APPLE

	60NS	70NS	80NS	100NS	120NS	150NS
1Meg x 1	5.90	5.25	4.75	4.30	4.25	—
4Meg x 1	—	—	34.00	—	—	—
1Meg x 4	—	—	31.00	—	—	—
1Meg x 4 (Zip Pack)	—	—	29.00	—	—	—
256 x 4 (Video Zip)	6.00	5.90	5.80	5.60	5.50	—
256 x 1	2.65	2.40	2.00	1.70	—	—
64 x 4	—	—	3.25	3.00	—	—
64 x 1	—	—	—	1.50	1.40	1.30

SIMM MODULES (Add \$5.00 for SIPP)

	60NS	70NS	80NS	100NS	120NS	150NS
1Meg x 9 (IBM)	56.00	52.00	48.00	45.00	45.00	—
4Meg x 9 (IBM)	—	219.00	199.00	—	—	—
256 x 9 (IBM)	23.00	21.00	18.00	17.00	—	—

INTEL Math Chips

8087	59.00	80287-XLT	129.00
8087-2	79.00	(50% faster)	—
8087-1	119.00	80387-16	189.00
80287-6	79.00	80387-16SX	159.00
80287-8	109.00	80387-20	239.00
80C287A	169.00	80387-20SX	169.00
80287-10	139.00	80387-25	239.00
80287-XL - (50% faster)	119.00	80387-33	239.00

IIT ADVANCED MATH CO-PROCESSOR

• 2-3 times faster than Intel • Plug & object code compat. w/Intel
• 5 Year Warranty
2C87-8MHz — 89.00 2C87-12.5MHz — 104.00
2C87-10MHz — 94.00 2C87-20MHz — 129.00

CYRIX FASMATH PROCESSOR

• Programs executed up to 3X faster • Plug & object code compat. w/Intel
• PC Week™ rated it #1 over all math chips
• 5 Year Warranty
83D87-16MHz — 195.00 83D87-33MHz — 225.00
83D87-20MHz — 205.00 83S87-16SX Ver. — 159.00
83D87-25MHz — 210.00 83S87-20SX Ver. — 169.00

AST MEMORY MODULES

MODEL#	AMT. UPGRADED	AST PART#	PRICE
Premium 386/25, 16 SX	1Meg	500718-001	65.00
Premium 386/33	1Meg	500718-002	69.00
Premium 486/25T, 25TE	1Meg	500780-003 WPB	85.00
25, 25E, 33T	4Meg	500780-004 WPB	279.00
	8Meg	500780-001 WPB	599.00

ZENITH MEMORY UPGRADES

MODEL#	AMT. UPGRADED	ZENITH PART#	PRICE
Z386/33	1Meg	ZA3800ME	89.00
	2Meg	ZA3800MG	139.00
Z386/25, 20	1Meg	ZA3600ME	89.00
	2Meg	ZA3600MG	139.00
	4Meg	ZA3800MK	309.00
Z248, Z286LP, Z386SX	2Meg	Z-605-1 modules	199.00
Turbo Sport 386, 386E	1Meg	ZA3034ME	219.00

BOCA AT PLUS

16 BIT MEMORY BOARD FOR 286, 386 AT
OK-8Meg Board • 4.0 LIM Compatible • New 5 Year Warranty
Conventional, Expanded and Extended Memory
Supports DOS, OS/2, LIM/EMS & EEMS
Versatile Split Memory Addressing
Operates with CPU Speeds to 33 MHz
Supports Desqview, Multitask operations
OK — \$119.00 2 Meg — \$199.00
4 Meg — \$289.00 8 Meg — \$465.00
Board made by Boca Research, AT plus
BOCA AT PLUS I/O 1 par., 1 ser., 0-4 meg \$159.00
BOCA AT I/O 44 2 ser. ports, 2 par. ports \$299.00

BOCA XT 8 BIT BUS

• Expanded memory for XT • Lim 4.0 compat. 0-2Meg • Uses 256x1-150
O-K \$109.00 1Meg \$170.00 2Meg \$229.00

IBM PS/2 SIMM MODULES

IBM PART NO.	WORKS WITH MODEL NO.	L.A. TRADE'S COMPT. PRICE
30F5348 (512K)	30-286	38.00
30F5360 (2Meg)	30-286, 50 MTHR BD.	115.00
6450375 (1Meg)	80-041	55.00
6450379 (2Meg)	80-111, 311	139.00
6451060 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	249.00
6450603 (1Meg)	50Z, 55SX, 70-E61, 0-61, 70-121, P-70	55.00
6450604 (2Meg)	50Z, 55SX, 55LS, 70-E61, 0-61, 70-121, P-70	105.00
6450605 (1-32Meg)	603, 604, 30F2933, 8Meg. Mod.	249.00
	Module for our 605 EXP. BD. "It Works"	595.00
6450608 (2Meg)	70-A21, A-61, B-21, B-61	110.00
78X8955 (128K)	25	35.00
30F2933 (4Meg)	65SX, 55SX, MTHR BD., 34F3077, 3453011, 605 EXP. BD.	249.00
1383679 (512K)	P/S1	50.00
6450092 (2Meg)	90, 95, P-75	139.00
6450128 (4Meg)	90, 95, P-75	349.00

Other PS/2 models not shown please call for quote
Please call for any questions on these SIMM Modules

COMPAQ MEMORY MODULES

MODEL#	AMT. UPGRADED	COMPAQ PART#	PRICE
System Pro	2Meg Module	115144-001	129.00
	8Meg Module	116561-001	829.00
	32Meg Module	116568-001	4500.00
DeskPro 486/25	2Meg Module	115144-001	129.00
	8Meg Module	116561-001	829.00
DeskPro 386/33	2Meg Module	115144-001	119.00
Sys. Pro, DP 386/33, DP 486/25	Expansion Bd	116569-001	479.00
DeskPro 386/25	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	215.00
DeskPro 386/20	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	215.00
DeskPro 386S	1Meg Exp Bd	113633-001	129.00
	4Meg Exp Bd	113634-001	309.00
	1Meg Module	113646-001	79.00
	4Meg Module	112534-001	239.00
DeskPro 386/20E	1Meg Exp Bd	113644-001	129.00
DeskPro 386/25E	4Meg Exp Bd	113645-001	309.00
	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	215.00
DeskPro 286N	1Meg Module	118688-001	59.00
	4Meg Module	118690-001	279.00
DeskPro 386N	1Meg Module	118688-001	59.00
	2Meg Module	118689-001	119.00
	4Meg Module	118690-001	279.00
DeskPro 386/16	1Meg Kit	108071-001	119.00
	4Meg Kit	108072-001	269.00
	1-2Meg Exp Bd	108069-001	309.00
DeskPro 286E	4-8Meg Exp Bd	108070-001	829.00
	1Meg Module	113131-001	59.00
DeskPro 286	4Meg Module	113132-001	215.00
	512K Kit	113012-001	79.00

MEMORY UPGRADES FOR COMPAQ PORTABLES AND LAPTOPS

Portable 386	1Meg Kit	107651-001	149.00
	4Meg Exp Bd	107653-001	519.00
	4Meg Daght. Bd	107654-001	519.00
Portable III	2Meg Kit	107332-001	119.00
Compaq SLT/286	1Meg Module	110235-001	129.00
	4Meg Module	110237-001	529.00
Compaq SLT/386	1Meg Module	118303-001	179.00
	2Meg Module	118304-001	359.00
	4Meg Module	118305-001	629.00
Compaq Lite 286	1Meg Bd	117081-001	89.00
	2Meg Bd	117081-002	159.00
Compaq Lite 386S/20	4Meg Module	121125-002	629.00
Compaq Lite 386S/20	1Meg Module	121125-001	249.00
Compaq Lite 286S/20	2Meg Module	—	429.00

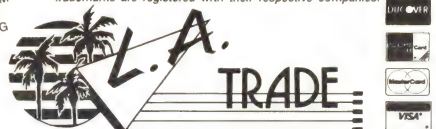
MEMORY BOARDS

IBM Compatibles, Compaq & PS/2

EXT/EXP MEMORY BOARD, BOCA 50Z
0-2Meg for PS/2 50, 50Z, 60 • 0 wait state ram • Uses 1Megx1-80NS
O-K board only \$129.00 2Meg with board \$224.00

• WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE •

All products Brand New & Guaranteed • We Buy Excess Inventory
Trademarks are registered with their respective companies



20950 S. Normandie, Unit M • Torrance, CA 90502

TOSHIBA LAPTOP MEMORY

LAPTOP MODEL #	AMT UPGRADED	TOSHIBA PART #	L.A. TRADE'S COMPT. PRICE
T1000SE/XE/LE	1Meg	PC14-PA8311U	119.00
	2Meg	PC14-PA8312U	189.00
T1200XE	2Meg	PC13-PA8306U	129.00
T1600	2Meg	PC8-PA8302U	125.00
T2000SX	1Meg	PC14-PA8316U	119.00
	2Meg	PC14-PA8317U	209.00
T2000SX/T1000LE	4Meg	PC14-PA8314U	450.00
	8Meg	PC14-PA8315U	719.00
T3100E	2Meg	PC9-PA8340UT	125.00
T3100SX	2Meg	PC15-PA8308U	125.00
	4Meg	PC15-PA8310U	279.00
T3200	3Meg	PC6-PA7137U	200.00
T3200SX	2Meg	PC12-PA8307U	125.00
	4Meg	PC12-PA8309U	279.00
T3200SXC	2Meg	PC19-PA8319U	309.00
	4Meg	PC19-PA8320U	309.00
T5100	2Meg	PC7-PA8301U	125.00
T5200, 5200C	2Meg	PC10-PA8304U	125.00
	8Meg	PC10-PA3313U	769.00
T8500	2Meg	PC10-PA8304U	125.00
	8Meg	PC10-PA3313U	769.00

BRANDNAME LAPTOP MEMORY

Zenith Supersport 286	1Meg	ZA-180-66	125.00
NEC Prospeed 286	1Meg	PC21-21	159.00
NEC Prospeed 286	4Meg	PC21-22	505.00
NEC Prospeed 386	2Meg	PC31-21	199.00
NEC Prospeed 386	8Meg	PC31-22	849.00
Sharp PC-6220	1Meg	CE 621B	159.00
TI Travelmate 2000	1Meg	2566034-0001	149.00
TI Travelmate 3000	2Meg	2566996-1	199.00
Zenith Super Sport — 286, 286E	1Meg	ZA-180-66	125.00
286E, SX	2Meg	ZA-180-64	199.00
SX Alpha	2Meg	ZA-180-86	199.00
Everex Tempo LX	2Meg	PCA 00053-00	179.00
AST Notebook	1Meg	500814-001	139.00
AST Notebook	4Meg	500814-003	399.00
AST Premium Exec	2Meg	386SX20	419.00
Sanyo 17/18 NB	2Meg	MBC-NBEM2	199.00
Panasonic CF170, CF270	1Meg	CF-BA165	179.00
IBM PS/2 LX40	2Meg, 4Meg	8MB	179.00, 399.00, 619.00
Epson NB53	1Meg, 4Meg	—	129.00, 349.00

LASER PRINTER MEMORY UPGRADES

HP Laser Jet II, IID, III, IIP, IIP	PAN 4420/4450I	PAN 4450	Epson 6000, Action, Tosh. Page Laser 6	OKI 400
1Meg	85.00	89.00	105.00	169.00
2Meg	115.00	125.00	155.00	—
4Meg	195.00	199.00	260.00	—

Other Laser Memory Available: QMS, TI, Konica, NEC

IBM LASER PRINTER MODEL 4019, 4019E	Panasonic 4455	NEC 90, 990 Silentwriter
1Meg: 1039136 \$99	2Meg: \$249	2Meg: \$249
2Meg: 1039137 \$145		
3.5Meg: 1038675 \$229		

H.P. COMPATIBLE FONT CARTRIDGE

IBM LASER PRINTER FONT CARD Similar to Turbo 25 \$199.00
TURBO 25 contains every English language font in Pacific Data's current 25 CARTRIDGES IN ONE!™ Cartridge, plus 2 Headline Fonts with 6 additional U.S. Fonts—Made by UDP Data Products \$119.00
TURBOSCRIPT™ gives you 47 scalable fonts in any point size. 12 more than Pacific Data or HP Adobe Postscript, supports the very latest Adobe Type 1 Font Formats—Made by UDP Data Products \$249.00

NO SURCHARGE FOR MASTERCARD, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FORTUNE 2000, GOVERNMENT & INSTITUTIONS. Price & availability subject to change. California orders add 7% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee. (Memory chips not installed in boards.) We accept International orders shipped via UPS Air, APO, FPO orders welcome. All credit card charges verified for fraudulent use. **SORRY, NO REFUNDS AFTER 30 DAYS — EXCHANGES ONLY.** We accept MC, VISA, Discover, AE, prepaid orders, purchase orders, wire transfer, COD (cashiers check) orders, cash & cashiers checks.

EVEREX

EV-3000, EV-159
0-3Meg, 4.0 Lim compatible • Uses 256x1 chips \$99.00
EV-8000, EV-178
0-8Meg, 4.0 Lim compatible • Uses 1Megx1 chips • Supports multi-tasking & DMA multi-tasking in hardware \$219.00

ORCHID RAM QUEST 16/32

0-8Meg of Backfill, Expanded or Extended Memory
Works with PS/2 Models 50, 50Z, 55SX, 60, 70, 80
Full Support for LIM/EMS 4.0 and OS/2 — 0 Wait State Ram
4 Year War. — Comes w/Ser. Par Ports and Free Ser Cable
USING OK — \$239.00 2 Meg — \$359.00
1 MEG x 9-10 4 Meg — \$469.00 8 Meg — \$677.00

AST 6-PK. MEMORY BOARDS

AST 6-Pak Plus for PC, XT, 64K \$129.00 — with 384K \$159.00

213-782-2880
FAX: 213-782-0240

CALL
TOLL FREE

1-800-433-3726
(US and Canada)

ESTAB. Mon-Fri, 8:00 a.m. to 5:00 p.m. PST
1985 Sat. 10:00 a.m. to 12:00 noon

Paradise

ORDER TOLL FREE: U.S. & Canada - 1 800 348-4PCP (4727)

Japan - 0031-11-1865

Australia - 0014-800-126-943

FAX - 1 (808) 875-0061

**In Hawaii
(808) 875-1100**

Shipping & Technical Assistance - 1 (808) 875-1108

COMPUTERS

IBM PS/2	
Laptop.....	Call
PS/2 Mod 30-286 30 Mb.....	1425
PS/2 Mod 50Z 30Mb/60 Mb.....	1250/1500
PS/2 Mod 55SX 30/60 Mb.....	1950/2100
PS/2 Mod 65SX 60/120 Mb.....	3550/3725
PS/2 Mod 70 60/120/A21.....	2915/3786/4800
PS/2 Mod 80 80/160/320.....	3275/3625/5075
PS/2 Mod 90/95-486.....	Call
PS/2 Mod 75.....	Call
COMPAQ	
LTE 286 20/40 Mb.....	2200/2300
LTE 386 SX 30/60.....	3695/3995
SLT 386 60/120 Mb.....	4299/4750
DPro 386S 20 Mod 1/40 Mb.....	1655/2150
DPro 386E 40/110 Mb.....	2750/3033
DPro 386/25E (All Models).....	Call
DPro 386/33L 120 Mb.....	5099

TEXAS INSTRUMENTS	
Travelmate 2000.....	1799
Travelmate 3000 20/40/60.....	Call

AST	
Premium Exec Notebook 286 20/40.....	Call
Premium Exec Notebook 386 20/40/60.....	Call
Premium 386 SX MDL 5.....	1550
Premium 386/25 MDL 5.....	2975
Premium 486/25 MDL 5V.....	4990

TOSHIBA	
T1000 SE/XE/LE.....	956/1259/1459
T1200 XE 20/40 Mb.....	1850/2099
T2000 SX 40 Mb.....	2999
T3100 SX 40/80 Mb.....	2996/3239
T3200 SX 40/120 Mb.....	3239/3550
T3200 SX Color.....	5799
T5200 40/100/200/Color.....	4488/4199/4688/5924

DFI	
286-12 Mhz.....	539
386-16 Mhz.....	839
386 SX-20 Mhz.....	965
386-25 Mhz.....	1215
386-33 Mhz.....	1590
486-25 Mhz.....	3039
1-year on-site warranty	
Call for Custom Configurations	

PANASONIC	
170/270.....	1439/1939

MONITORS & TERMINALS

MONO/COLOR	
IBM 8503/8512.....	227/459
Samsung RGB.....	200
Amber 12" TTL.....	85
VGA/EGA MONITORS	
IBM 8506/07/08.....	899/629/928
IBM 8513/14/15.....	525/1150/699
Magnavox VGA.....	259
Mitsubishi EGA.....	329
Mitsubishi 1381/HL 6935.....	485/1900
NEC 2A/3D.....	460/595
NEC 4D/5D.....	969/2265
Packard Bell 8529/8541/8510.....	275/290/339

Panasonic 1381/1391.....	429/499
Samsung VGA/4581/4592.....	344/430/309
Sony CPD 1304.....	660
Zenith 1492.....	595

VIDEO BOARDS

ATI VGA/Ultra.....	Call
ATI VGA Wonder 256/512+.....	199/240
Everex EGA.....	89
Hercules GB 1024/1024+2.....	659/959
NEC Graphics Engine 256.....	895
Orchid ProDesigner II 1 Mb.....	289
Paradise VGA+/16.....	122/145
Paradise VGA 1024.....	175/219
Herc/Mono/w Parallel Card.....	45
VGA 1024 256/512.....	109/139

PRINTERS

CANON	
BJ10E.....	309
CITIZEN	
GSX 140/GSX 145.....	295/399
HSP500/550.....	301/421
DICONIX 150	
P/S.....	343/347
EPSON	
LX 810.....	173
LQ 1010.....	369
FX 850.....	289
LQ 1050.....	579
FX 1050.....	399
LQ 2550.....	849
LQ 510.....	259
EPL 7000.....	Call
LQ 850.....	435
EPL 7500.....	Call
LQ 860.....	549

HEWLETT-PACKARD	
LaserJet 3/3D.....	1549/2499
LaserJet 3SI.....	3750
LaserJet 2P/3P.....	839/1049
DeskJet 500.....	489
ScanJet+.....	739
PaintJet/XL.....	955/1680

FONTS & MEMORY	
Pacific Data 25-1.....	259
Pacific Data 1/2/4 Mb.....	129/159/265
Pacific Connect Laser Share.....	299
Pacific Page PE/XL.....	349/699
Pacific Data Plotter in a Ctg.....	239
LaserJet Memory 1/2/4 Mb.....	119/149/245
Compaq 1/4 Mb Modules.....	118/383
IBM/Toshiba Memory.....	Call
CPI Jet Page/Superset 425+.....	299/259

IBM	
4019 E/4019 Laser.....	995/1495
Proprinter XL24E/X24E.....	765/595
Proprinter P.....	365
ExecJet.....	780

NEC	
P-3200/3300.....	276/Call
6200/6300.....	476/645
Silent Writer 290.....	2450
Silent Writer 2 Mod 90.....	1595
OKIDATA	
ML 182.....	228
ML 320/321.....	324/451
ML 380.....	289
ML 390+/391+.....	449/613

Quality at the best prices under the sun.



Specializing in International Orders

ML 393+/393+color.....	968/1055
Okilaser 400/800.....	639/965
Okilaser 820/840.....	1276/1949

PANASONIC	
1123/1180.....	239/165
1124/1124i.....	269/329
1624/1654/1695.....	379/619/410
4420/4450/4455.....	869/1244/2099

TERMINALS

Wyse 50/60.....	375/300
Wyse 30/85.....	310/339
Wyse 150/185.....	289/379

SOFTWARE

Aldus Pagemaker 4.0.....	495
Ashton Tate dBase III+/IV.....	419/479
Borland Quattro Pro 2.0.....	295
Carbon Copy.....	105
Clarion Prof. Developer.....	450
Compaq/IBM DOS.....	Call
Harvard Graphics 2.3.....	289
IBM Displaywrite 5.0.....	249
Lotus 1-2-3 2.2/3.1.....	349/399
Microsoft.....	All Titles-Lowest Price
Microsoft Windows 3.0.....	93
Norton Adv. Util 5.0.....	110
Procomm Plus.....	62
Quicken 4.0.....	39
Ventura Publisher V 3.0.....	479
WordPerfect 5.1.....	245
400 Additional Titles In Stock	

PLOTTERS AND DIGITIZERS

HEWLETT-PACKARD	
7475A.....	1349
7570A/7575A.....	2699/3500
7576 EXL.....	4599

SUMMAGRAPHICS	
Summasketch 2 12X12/12X18.....	335/565
CALCOMP	
Pacesetter 2000.....	3150/3995
12 X 12/12 X 18.....	298/597

MULTIFUNCTION BOARDS/CARDS/CHIPS

IBM 5250 Emulation.....	675
AST 5251 Emulation.....	499
AST 6-Pack w/384 k.....	145
Intel AboveBoard Plus w/512 k.....	289
Intel InBoard 386 PC.....	492
Cyrix Fasmath.....	Call
80287-XL.....	189
80387-SX/16/20/25/33.....	290/320/378/462/562

MODEMS & COMMUNICATIONS

ATI 9600 ETC.....	484
CPI 2400 Internal.....	79
CPI 2400 Ext Fax.....	123
CPI 2400 Ext MNP.....	154
CPI 9600 Ext.....	439
Everex 2400i/2400 MNP.....	99/164
Hayes 2400/2400B.....	319/218
Hayes Ultra 96.....	639
Practical Pocket Modem.....	99

Intel 2400/9600.....	217/499
MegaHertz Laptop Modems.....	Call
Practical Perif. 2400/9600.....	132/479
US Robotics HST/Dual.....	585/809

FAX MACHINES

Sharp FO 216/240/334.....	559/699/795
Intel Satisfaction.....	385
JT Fax 9600 B.....	339
CPI 2496 IF.....	173

MICE

DFI 200/400.....	32/42
Logitech C9/Bus/PS2.....	82
Logitech Mouseman.....	72
Logitech ScanmanPC/PS2.....	169/240
Microsoft Mice/+Windows 3.0.....	103/145

DRIVES & TAPES

Colorado DJ10.....	239
Conner 40/100.....	299/499
ST 225/238.....	189/192
ST 157A/251-1.....	229/239
ST 1126A/1144A/1239A.....	449/630/795
ST 4096/4182E.....	530/925
Plus II XL 50/105.....	388/578
Mountain.....	Call
Panasonic LF5010 Worm.....	2215
Procom Ext 5.25 PS/2.....	199
Procom Ext PS2 Hard Drives.....	Call
Procom Laptop Floppy.....	Call

NETWORK

ARTISOFT	
Lantastic 2 Mb Starter Kit.....	338
Lantastic 2 Mb Adapter.....	139
Lantastic 10 Mb Starter Kit.....	469
Lantastic 10 Mb Adapter.....	199
NETWARE	
Network 2.2 5-User.....	499
Network 2.2 10-User.....	1159
Network 3.11 20-User.....	2049
Network 3.11 100-User.....	4045
NE 1000/NE 2000.....	159/189
NE/2 / NE 3200 (EISA).....	249/749

SMC	
Arctnet PC 130 8 Bit.....	99
Arctnet PC 500 fs 16 Bit.....	289
Arctnet PC 500 ws 16 Bit.....	179
MISCELLANEOUS & ACCESSORIES	
Keytronics KB101+.....	89
Kensington Masterpiece/Plus.....	85/95
AB Switch Box.....	27
TrippLite 450/1200/2000.....	296/618/1175
4 outlet surge.....	39

**Win
A Free
Hawaii Vacation!**

Ask for details.

No purchase necessary

Most orders shipped insured next or second day air **FEDERAL EXPRESS** / 24-hour worldwide order tracking / Printer Orders received by 9 PM CST can be shipped same day / All credit card and COD orders checked electronically / We accept Amex, Visa, MC, JCB, Discover, Diners Club, COD's, Wire Transfer, Letter of Credit, **TERMS & LEASE AVAILABLE** (one day approval) / Credit cards not charged until product shipped **GOVERNMENT AND EDUCATIONAL P.O.'S ARE WELCOME** / Allow 10 days for personal checks to clear / Prices reflect a 3 per cent cash discount / Non-defective returns subject to a restocking charge / All warranties good through Paradise Computer Products / Prices subject to change without notice.

HOURS: 8:30 AM TO 8:30 PM CST MON-FRI, 10 AM TO 4 PM CST, SAT.
Paradise Computer Products Ltd. P.O. Box 890553 Dallas, TX 75389-0553

Circle 220 on reader service card





OL 400 LED Page Printer

Features: • 4 PPM • 300 DPI • More Std. Typefaces/Fonts Than LaserJet™ IIP • High-Capacity 200-Sheet Paper Tray Included • Slim Low-Profile Design Fits Any Desktop • HP® Series II Compatible • Industry's Best Warranty: 5 Years On Printhead, 1 Year Parts/Labor On Printer

CDW™ Price **\$617.08**

OKIDATA

**The Personal
Page Printer For
Smaller Budgets**

WHY PAY RETAIL?

CDW™ Sells For Less

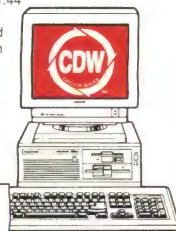
AND **SERVICES** YOU BETTER

MAXSTATION 286 Today's Best Computer Value

Features: • 80286 Processor/Dual Processor Speeds (12.5 and 8 MHz) • Total Exp.: (5) 4-16 Bit, 1-8 Bit • One 3.5" (1.44 MB) Floppy Disk Drive • One 5.25" (1.2 MB) Floppy Disk Drive • Internal 40 MB 28ms Hard Drive • 1 MB RAM • VGA Built-In • 4 Built-In Ports • Lotusworks™ Integrated Software Package • Operating System: MS-DOS® 4.01, MS-DOS® Shell, GW-BASIC® • 1 Year Limited Warranty

CDW™ Price
\$849.46

MAGNAVOX



HARDWARE, SOFTWARE & PERIPHERALS AT **DISCOUNT** PRICES

NETWORKING PRODUCTS

NOVELL

ETHERNET Interface Connector (NE1000)\$148.44
ETHERNET For PS/2 (NE/2)251.72
ETHERNET Board (NE2000)174.68
ETHERNET Eisa (NE3200)756.18

3Com®

3COM 3C503 TP 10 Base T\$293.41
3COM 3C507 Ethernet Card294.37
3COM 3C503 Etherlink199.70
3COM 3C505B Ethernet Plus583.81
3COM 3C523 MCA Ethernet280.46
3COM Ethernet Repeater848.31
3COM 3C501 Ethernet Board322.73

THOMAS+CONRAD

6142 Arcnet 8-Bit\$93.09
6045 Arcnet 16-Bit205.23
6142 TP+ Arcnet103.53
6046 PS/2 Board Arcnet228.16
6150-10 8 Port Smart Hub509.65
6150-11 16 Port Smart Hub691.01
6045 Twisted Pair Plus Ethernet229.07
6046 Twisted Pair PS/2 Plus Ethernet245.11
4045 16/4 Token Ring XT/AT510.23

SMC® ACCESSORIES

3508TP Concentrator AUI\$747.73
3508TP Concentrator BNC897.73
3508TP Concentrator TP727.27
Active Hub 8 Port Twisted Pair365.91

SMC INTERFACE CARDS

3008 Coax 8-Bit Ethernet\$169.35
3008 TP 10 Base T 8-Bit Ethernet199.48
3016 Coax 16-Bit Ethernet174.40
3016 TP 10 Base T 16-Bit Ethernet216.92
PC 500FS Coax Arcnet File Server 16-Bit279.31
PC 500WS Coax Arcnet Workstation 16-Bit169.41
PC 550FS TP Arcnet File Server 16-Bit304.60
PC 550WS TP Arcnet Workstation 16-Bit187.21
Eisa 3200 Arcnet Twisted Pair736.08
Eisa 3200 Arcnet Coax718.18

WESTERN DIGITAL

WD 16-Bit 10 Base T Ethernet\$205.44
WD MCA PS/2 10 Base T Ethernet224.42
WD Ethernet Plus/A PS/2 Coax247.13
WD Elite 16-Bit Ethernet Plus Coax173.84
WD Elite 8-Bit Ethernet Plus Coax147.06
WD Elite Combo Ethernet TP, Coax, AUI199.57

XIRCOM

Arcnet Pocket Adaptor Coax\$239.20
Arcnet Pocket Adaptor RJ45239.77
Ethernet Pocket Adaptor Thin Coax362.50
Ethernet Pocket Adaptor 10 Base T373.86
Parallel Port Multi75.00

ARTISOFT

E143 Ethernet Adaptor Kit\$211.18
LANtastic Ethernet Starter Kit477.27
LANtastic 2Mbps Starter Kit339.53
LANtastic 2Mbps Adaptor140.59

CALL FOR ADDITIONAL ARTISOFT PRODUCTS

DCA

IRMA Trac T.R. Convertible\$539.00

NETWORKING SOFTWARE



WordPerfect
CORPORATION

ASHTON TATE dBase IV LAN Pak\$626.37
BORLAND Paradox Network 5 User614.40
BORLAND Quattro Pro Network Node193.18
BRIGHTWORKS PS Print243.68
CC Mail ProductsCALL
DELTA TECH Direct Net Menu149.22
HARVARD GRAPHICS LAN PackCALL
LOTUS 1-2-3 2.3 Server558.66
LOTUS 1-2-3 2.3 Network Node282.88
LOTUS 1-2-3 3.1 Server563.33
LOTUS 1-2-3 3.1 Network Node349.50
LOTUS Freelance+ Server456.93
LOTUS Symphony Server599.13
MICRORIM Rbase V3.1 LAN 6 Users589.00
MICROSOFT Word 5.5 Network Node185.39
MICROSOFT Excel Network Nodes255.60
NANTUCKET Clipper V5.0485.50
NOITON LAMBERT PRODUCTSCALL
NOVELL Network Access Server98.65
ONTRACK Disk Manager For Novell98.65
SOFTWARE PUB. Professional LAN Pack309.13
WORD PERFECT 5.1 5 Pack1099.37
WORD PERFECT Office 5-User V.3.01297.31
WORD PERFECT Office 20PK V.3.01923.08
WORD PERFECT Plan Perfect Server269.21
WORD PERFECT Plan Perfect Add. Modules109.75
WORD PERFECT Draw Perfect Server269.53
WORD PERFECT Draw Perfect Add. Station165.93
XTREE Network209.96

TAPE & FLOPPY DRIVES

IRWIN®

IRWIN SX 40-120 MB Internal\$262.40
IRWIN SXE 40-120 MB External349.22
IRWIN SX 90-250 MB Internal374.18
IRWIN SXE 90-250 MB External486.63
IRWIN 2120 120MB Internal507.53
IRWIN 445A 40MB External449.60
IRWIN 485A 80MB External533.70
IRWIN A120E-120 MB High Speed External445.60
IRWIN A250E-250 MB High Speed External529.43

Call For Controllers, Accessory Kits and Tapes.



Mountain

MOUNTAIN 300MB External Filesafe\$2498.19
MOUNTAIN 2.2 Gigabyte Ext. Tape Drive4427.60
MOUNTAIN 250MB External Backup609.22
MOUNTAIN 250MB Internal Backup484.33
MOUNTAIN 1.3 Gigabyte External Filesafe3574.20
MOUNTAIN 120MB Internal Tape Drive249.80
MOUNTAIN 120MB External Tape Drive448.88
MOUNTAIN 250MB Internal Filesafe1138.89
MOUNTAIN 250MB External Filesafe1509.66

Call For PS/2 Drives, Controllers, Accessory Kits and Tapes

COLORADO MEMORY

COLORADO D110\$239.72
COLORADO D120298.16
COLORADO QFA700708.42

Call For Accessories And Interfaces

PLOTTERS, DIGITIZERS & SCANNERS

CalComp

12 x 12 w/16 But.CALL 2036 Pacesetter ECALL
12 x 18 w/16 But.CALL 2024 Pacesetter DCALL

1212IS1\$358.42 12 x 17\$558.35

Summagraphics®

Summagraphics Summa II 12 x 12\$327.00
Summagraphics Summa II 12 x 18\$499.00
PANASONIC FX-RS307U 600x600 Scanner\$34.06
COMPLETE PC Full Page Scanner\$53.30
EPSON ES300C Color Scanner\$1185.00

HOUSTON INSTRUMENT

DMP-61\$2610.66 DMP-62\$3394.15
DMP-61DL\$650.16 DMP-62DL\$4068.28

NEWLETT PACKARD

HP7575A\$3388.70
HP7475A1199.00
HP7570A2695.56
HP7570A2729.30
HP7576-EXL4456.04
HP SCANJET689.62

CAD MONITORS & CARDS

MITSUBISHI HL6915ATKL\$1959.77
SIGMA Laserview 19" Full Page1619.18
NEC Graphics Engine 256/16892.04 / 599.36
MITSUBISHI HL6935 ATKL 19"1798.91
HERCULES GB1024 Graphics Station653.40
CALCOMP 3401CALL

FAX & ACCESSORIES

A-B Switching Box (AB X Box)\$28.00 / 34.95
BROWN-WAGH Sound Blaster155.95
CH PRODUCTS PS2 Gamecard III47.25
CH PRODUCTS XT/AT Gamecard III w/Y Cable36.50
CH PRODUCTS Flight Stick45.00
CH PRODUCTS Roller Mouse85.40
CH PRODUCTS Mach III Joystick31.20
COMPLETE PC Communicator409.56
COMPLETE PC Portable Fax307.67
Electronic 4-Way Switchbox Parallel89.50
Electronic 4 to 2 Parallel Box109.50
5TH GEN Logical Connection 259K/512KCALL / 438.59
INTELLICOM Long Link117.70
KENNINGTON MasterpiecePlus84.70 / 97.64
KEYTRONICS 5151 IBM or AT&T126.70
KEYTRONICS 101+93.50
PANASONIC UF300 Plain Paper Fax1545.18
PRACTICAL PERIPH. 32K Inline Parallel Buffer123.60
PRACTICAL PERIPH. P/LINK Parallel Extender99.50
ROLAND Sound Card L/AYS388.63
SOTA 286-12 Accelerator260.45
SOTA 386-16 Accelerator465.70
XT Power Supply 150 Watt59.00
AT Power Supply 200 Watt79.24

CompuFax 9600\$399.50 PANASONIC UF170\$664.36
JTFax 9600\$27.65 SHARP FO-334687.91
SHARP FO-216516.30

CD-ROM & OPTICAL DRIVES

HITACHI 3600/3650\$435.81 / 495.68
HITACHI 1700S External447.42
MAGNAVOX 461FS Ext. w/CD Bundle419.06
NEC CDR 36 External Portable388.40
NEC CDR 73 External597.22
NEC CDR 83 Internal539.16
PANASONIC LF5010 Worm External2089.91
PANASONIC LF5014 Worm Internal1895.48
PANASONIC LF7010 Ext. 1 Gb Erasable Optical2694.61
SONY CDU-7201 External CD-ROM484.78
SONY CDU-5311 Internal CD-ROM354.17
SONY CDU-54101 Internal SCSI CD-ROM418.32
SONY SMO-5501 650MB Erasable Optical Kit3498.10
TOSHIBA XM3301 External639.83
TOSHIBA XM3301 Internal548.37
CD-ROM Software Bundle169.00

SOFTWARE

ACT Software 2.0\$209.18
ALPHA FOUR 1:1 Relational Database299.50
ASHTON TATE dBase IV429.77
AUTODESK AutoSketch147.50
AUTODESK Animator277.48
BANNER BLUE Orig. Plus Advanced62.30
BORLAND Reflex157.95
BORLAND Sidekick V2.049.19
BORLAND Turbo C++65.00
BORLAND Turbo Pascal93.60
BORLAND C++ V2.0308.88
BORLAND Paradox V3.5474.00
BORLAND Quattro Pro 3.0304.22
BRODERBUND Print Shop V7.036.50
CENTRAL POINT PC Tools V7.098.96
CLARION Professional Developer448.54
COMPUTER ASSOC. Super Project Expert413.30
CUSTOM Freedom of the Press Postscript241.44
DAC Easy Accounting 4.185.33
DAC Easy Bonus 4.0169.31
DATEBASE File Management455.10
FIFTH GENERATION Mace Util. 199089.80
FIFTH GENERATION Fastback Plus108.70
FIFTH GENERATIONS Direct Access58.99
FORM TOOL 3.057.90
FOXBASE Foxpro439.00
GIBSON Spinwrite 2.0 V1.163.95
IBM Displaywrite 5.0235.50
INTEL C Code BuilderCALL
INTUIT Quicken39.70
LAN Spool 286/386258.10 / 362.21
LOTUS 1-2-3 V2.3334.27
LOTUS 1-2-3 V3.1399.66
LOTUS Agenda V2.0277.50
LOTUS Freelance Plus309.25
LOTUS Magellan95.85
LOTUS Manuscript309.79
LOTUS Symphony479.73
MICRORIM Rbase V 3.1 For DOS449.50
MICROCOM Carbon Copy V6.0109.37
MICROSOFT C Compiler 6.0302.40
MICROSOFT DOS 5.0 Upgrade59.42
MICROSOFT Flight Simulator 4.039.50
MICROSOFT Fortran Compiler 5.0282.43
MICROSOFT Quick Basic Compiler 4.564.75
MICROSOFT Visual Basic126.48
MICROSOFT Word V5.5208.77
NANTUCKET Clipper V5.0485.50
NORTON Advanced Utilities V6.0109.90
POWER UP! Calendar Creator Plus36.66
PROCOMM Plus63.87
QUARTERDECK Desquiview 386 V.5.11126.86
QUARTERDECK QEMM 386 Manager59.00
QUARTERDECK QRAM & Manifest46.20
QUARTERDECK QRAM & Manifest for PS/259.00
QUARTERDECK Desquiview72.10
QUALITAS 386 Mca 5.064.19
REFERENCE Grammatik 4 V2.055.78
SOFTLOGIC Software Carousel53.40
SOFTWARE PUB. PFS: Write154.30
SYMANTEC Q&A V4.0259.60
SOFTWARE PUB. Harvard Graphics V3.0336.08
TOBIAS Managing Your Money96.42
TRAVELING SOFTWARE Laplink III85.58
TRAVELING SOFTWARE Battery Watch33.50
TRAVELING SOFTWARE Desklink97.60
WORDPERFECT 5.1 5.25" or 3.5"249.39
XEROX Ventura Software Version 3.0499.24
XEROX Form Base 1.1303.37
ZSOFT PC Paintbrush IV Plus109.86

AT CDW™ YOU GET MORE COMPUTING FOR YOUR BUCK. CALL NOW!

♦ **CDW™** means Service ♦ **CDW™** means Savings ♦ **CDW™** means Business ♦ **CDW™** means Experience
♦ **CDW™** means Technology ♦ **CDW™** means Networking ♦ **CDW™** means Computing

PCW279

**FREE TECHNICAL
SUPPORT FOR CDW™
CUSTOMERS.**

(800) 359-4CDW

WE SELL NAME BRANDS FOR LESS!

**ALWAYS WORKING TO
KEEP YOUR COMPUTING
ONE STEP AHEAD.**

MaxStation 386SX
Personal Computer

- 80386SX Processor
- 20 MHz • 80 MB HD
- One 3.5" (1.44 MB) Floppy
- One 5.25" (1.2 MB) Floppy
- Super VGA On Motherboard
- 1024 x 768 Res. • 2 MB RAM
- 16 Max • 4 16-Bit Exp. Slots
- Operating System: MS-DOS® 4.01, GW BASIC® Programming Language, Lotus Magellan • 2 Drive Cavities Available • Publish It!® Desktop Publishing Pkg. • Lotusworks® Integrated Software Pkg. • 25 Pin Parallel Port, 9-Pin & 15-Pin Serial Port, 15-Pin Video Port
- 101-Key Keyboard • 1 Year Parts and Labor Warranty, 6 Month On-Site Service

CDW™ Price.....\$1438.46



**WHY PAY
RETAIL?**

**CDW™ Sells
For Less**

AND SERVICES YOU BETTER

**CDW™: RATED #1 IN AN
INDEPENDENT SURVEY OF
READERS BY PC MAGAZINE**

EPSON NB3s 386SX Notebook Computer

- Powerful 80386SX, 16MHz Microprocessor with 0 Wait States • Opt. Removable 20 MB or 40 MB Drive Module • Std. RAM of 1 MB, Exp. Up to 5 MB • Supports Sophisticated Graphical User Interfaces Like Microsoft® Windows™, MS-DOS® 4.01 • Removable Battery, Plus an AC Adaptor Stnd. • 1-Year Limited Warranty

Epson NB3s 386SX.....\$2149.50

20 MB (2.5") Removable HDD.....**CALL**
40 MB (2.5") Removable HDD.....**CALL**

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES

COMPUTERS

MAGNAVOX

MAX STATION 286 40MB VGA Interface.....\$790.64
MAX STATION 386SX 80MB VGA Interface.....1069.85
MAX STATION 386SX20 80 MB VGA Interface.....1372.94
286 VGA Notebook Laptop.....1588.26

PACKARD BELL

Packard Bell 286 Notebook.....\$1595.44
FORCE III 286/12 40 Meg. 1 MB VGA Adapt.....869.55
FORCE SX16 44 MB VGA Interface.....1069.93
Force SX 20 MHz, 85 MB, VGA, 2 Drives.....1499.62
Force SX 20 MHz, 130 MB, 2 Dr. Modem.....1673.25
Force SX 20 MHz, 210 MB, 2 Dr. Fax Board.....1998.70

Panasonic

CF170 XT 10MHz 20MB Notebook Laptop.....CALL
CF 270 286 16MHz 20MB VGA Notebook.....CALL
CF 370 386SX 60 MB VGA Notebook.....CALL

ALR

ALR 386/33 Model 101.....\$1655.70
ALR Business Versa 486/33 101.....\$3279.60
ALR PowerFlex 286 40 MB.....CALL
ALR PowerFlex 286 40 MB.....1019.20

CALL FOR THE LATEST MODELS FROM ALR

COMPAQ

LTE 286 Mdl. 20.....\$2051.00 DP386/20E Mdl. 1.....\$287.46
LTE 386 Mdl. 20.....\$398.00 DP386/25E Mdl. 1.....\$329.32
LTE 286 Mdl. 40.....\$229.20 CPO-386/33 L.....CALL
DP386/320 Mdl. 1.....\$1709.20 SLT 386/320 Mdl. 60.....\$4129.26

SAMSUNG

SAMSUNG SD630 286/12 Base.....\$495.00
SAMSUNG SD716 386SX 16 Base.....\$97.27
SAMSUNG Notemaster SX16 20 MB.....\$288.70
SAMSUNG Notemaster SX16 40 MB.....\$2495.42

TEXAS INSTRUMENTS

TEXAS INSTR. TravelMate 2000.....\$1945.11
TM 3000 SX Notebook 20 MB.....\$2598.10
TM 3000 SX Notebook 30 MB.....\$2839.31
TM 3000 SX Notebook 40 MB.....\$3399.49
TM 3000 SX Notebook 60 MB.....\$3399.67

HP, IBM & COMPAQ MEMORY

1MB Module CPO - 386, 386S, 20E/25E.....\$105.23
2MB Memory Board CPO LITE 286.....\$198.00
4MB Memory Board CPO LITE 286.....\$67.00
4MB Memory Card CPO LITE 386S.....\$69.00
2MB Memory Board CPO SLT 386.....\$279.00
4MB Memory Board CPO SLT 386.....\$67.00
8MB Memory Mod CPO Desktop System Pro.....\$350.00
4MB Module CPO - 386, 386S, 20E/25E.....\$350.00
4MB CPO Exp. Bd. - 386S, 20E/25E.....\$385.00
1 MB AST Cupid Simms.....CALL
4 MB AST Cupid Simms.....CALL
AST Exec 386SX 4 MB Module.....CALL
2MB Upgrade HP LaserJet II / IID.....\$189.00
1MB Upgrade HP LaserJet IIP / IIL.....\$112.00
2MB Upgrade HP LaserJet IIP / IIL.....\$189.00
4MB Upgrade HP LaserJet II / IID.....\$352.00
IBM Personal System II Memory.....CALL
2MB Memory Module IBM PS/2 Mod 70/502.....\$160.00
1MB OKI Laser 400.....\$159.00

KINGSTON FOR TOSHIBA

2MB 1200XE.....\$185.00 4MB 3100SX.....\$392.00
2MB 3100XE.....\$185.00 2MB 3200SX.....\$273.00
4MB 3200SX.....\$392.00 3MB 3200.....\$273.00
2MB Memory Module TOSHIBA 5200.....\$185.00
8MB Memory Module TOSHIBA 5200.....\$185.00

WYSE TERMINALS

WYSE 50/60 Amber or Green.....\$349.11/286.95
WYSE 85 / 30 Amber or Green.....\$359.00/278.95
WYSE 195 V1 320 Amber, Green or White.....\$559.89
WYSE 150 Amber, Green or White.....265.56

MATH COPROCESSORS

INTEL 8087-2.....\$115.90 INTEL 8087-SX.....\$131.25
INTEL 287-XLT.....\$75.00 INTEL 387SX/20.....143.75
INTEL 80287-XL.....\$75.00 INTEL 8087-25.....218.75
INTEL 8087-20.....\$75.00 INTEL 8087-33.....218.75
CYRIX FasMath 16 MHz/20 MHz.....\$198.50/198.50
CYRIX FasMath 25 MHz/33 MHz.....\$198.50/208.32
CYRIX FasMath SX 16 MHz/20 MHz.....\$129.72/139.48

DOT MATRIX & LASER PRINTERS

EPSON

LX810.....\$154.00 LQ510.....\$242.00
LQ870.....\$35.00 FX850.....\$27.00
LQ1050.....\$83.00 LQ2550.....\$49.00
FX1050.....399.00 EPL 7000 Laser.....78.00
LQ1070.....CALL EPL 7500 Laser PS.....CALL
LQ200.....225.00 LQ570.....259.00
DXF 5000/8000.....CALL

CDW™ stocks all cut sheet feeders and ribbons.

NEC

Silentwriter 90.....\$1549.50 P6300 New Model.....\$626.90
P6200 24-pin.....467.70 P6200 24-pin.....272.22
P3300 24-pin.....378.33 P3300.....865.50

DICOMIX by KODAK

150 Parallel/150 Serial.....\$329.07/339.07

OKIDATA

ML182 Turbo.....\$226.66 ML390+.....\$439.22
OKILASER 400.....\$17.08 ML391+.....\$506.41
OKILASER 800.....\$26.96 ML380.....\$234.61
OKILASER 820.....\$128.88 ML393+.....\$99.50
OKILASER 840.....\$169.55 ML393 + Color.....99.50
ML320.....\$314.68 ML321.....\$438.44

Panasonic

1124 I.....\$279.69 1624.....\$359.39
1123.....\$229.00 1180/1654.....\$499.99/CALL
4420 Laser Printer.....\$789.50

HEWLETT PACKARD

H-P LaserJet Model III.....CALL
H-P Deskjet 500/H-P LaserJet IIP.....\$485.50/489.00
H-P LaserJet III.....CALL H-P Laser III SL.....CALL
H-P Paintjet.....\$958.85 H-P Paintjet XL.....\$1665.78
H-P LaserJet IIP.....\$323.68
CANON BJ10E Bubble Jet.....\$232.68
CITIZEN GSX 140.....\$289.44
QMS PS410.....\$1977.00

PACIFIC DATA 25 in 1 Cart. LAS3.....\$265.91

PACIFIC DATA Page Postscript 4 HP LAS3.....\$349.44

PACIFIC DATA Connect 169 256K.....\$272.79

PACIFIC DATA 1 MB/360KB Trans for LaserJet II.....\$169.00

PACIFIC DATA 1 MB for 2P III.....\$118.20

POSTSCRIPT CART W/2 MB HP LAS2.....\$339.00

CPI JETMEMORY 1MB for HP/II/III/IV.....\$129.60

CPI JETPAGE for HP/II/III/IV Postscript.....\$208.72

CPI SUPERSET 425 Fonts for all HP Lasers.....\$209.67

DRIVES, TAPES & CARDS

COMPAQ 360KB (SLT).....\$179.00

COMPAQ 1.2 MB/360KB (SLT).....\$209.00

COMPAQ 360KB (LITE).....\$189.00

COMPAQ 1.2 MB/360KB (LITE).....\$209.00

CONNER 40 MB / 204 MB.....\$397.42/\$161.81

CONNER 84 MB / 320 MB.....\$279.38/\$659.41

IOMEGA B144/844 Trans.....\$799.11/\$899.73

PLUS Hardcard IXL 105MB.....\$589.46

PL56 Hardcard IXL 50 MB.....\$388.75

SYSGEN 5.25" 3.5" External Floppy.....\$209.25

PACIFIC RIM 5.25" External Floppy for Laptops.....\$185.56

TOSHIBA (All Models) EPSON LT360KB.....\$179.00

TOSHIBA 1.2 MB/360KB.....\$189.00

Seagate

ST225 20 MB.....\$182.35 SEAGATE 4096 80.....\$449.74
ST238 30 MB.....\$198.82 SEAGATE ST-251-1.....\$243.10
ST4383E 329 MB 1392.94 ST4182E 160 MB.....\$874.44
1102A 84 MB.....\$319.20 ST157A 44 MB 3.5.....\$199.17
ST1144A 124 MB IDE.....\$418.22

MICROPOLIS

1654-7 182MB HH.....\$794.30 1684-7 340 MB.....\$1323.52
1664-7 345MB HH.....\$1558.33 338 MB ESDI 1142.14

SURGE SUPPRESSORS

CURTIS Ruby Plus.....\$57.60
DATASHIELD 100.....\$9.55
DATASHIELD 385.....\$3.95
KENSINGTON MP+.....\$6.00
TRIPPLITE Remote.....\$8.75
TRIPPLITE Isobar 4 Outlet/6 Outlet.....\$44.25/49.10

MODEMS & COMMUNICATIONS

intel

2400 Internal.....\$139.75 2400 External.....\$167.94
2400B MNP.....193.72 2400 External MNP.....217.11
9600 External.....495.40 PS/2 Internal/2400.....223.22

PRACTICAL PERIPHERALS

2400 V.42 Int.....\$169.11 2400 Int.....\$128.88
2400 V.42BIS Ext.....199.50 2400A.....167.97
9600 V.32/42BIS.....447.67 Pocket 2400.....99.50

HAYES

2400 External.....\$325.84 2400B Internal.....\$224.45
ULTRA 9600 Ext.....629.40 2400 V.42 Ext.....399.40
ULTRA 144.....CALL

Robotics

Courier 2400.....\$279.60 V.32 9600E.....\$753.03
Dual 14,400 HST.....\$799.65 14,400 HST.....\$69.00

MHZ

2400 for TOSHIBA 139.33 2400 for COMPAQ LITE.....\$139.00
CPI VIVA 2400 Internal/9600 External.....79.40/429.82
CPI VIVA 2400 External Faxsend Modem.....112.50
CPI VIVA 2400 External Hardware MNP.....149.73

MULTI-TECH

MULTI-TECH 224EH 2400 Ext.....\$299.50
MULTI-TECH 696EA 9600.....\$473.03
MULTI-TECH MT932EAB 9600.....\$519.70

BOARD & COMM PRODUCTS

AST 5251-11 Enhanced Local.....\$434.75

DIGIBOARD PC/8 Intelligent 8 Serial.....\$799.60

DIGIBOARD PC/16 Intelligent 16 Serial.....\$1172.34

DIGIBOARD PC/8 8 Serial Ports.....\$424.73

EVEREX 2400 Internal Modem.....109.75

EVEREX 2400 External MNP w/SLT.....189.88

EVEREX 2400 MNP Internal.....145.34

IRMA III 3270 PS/2 MCA Board.....\$412.36

IRMA III 3270 XT/AT.....\$409.60

WORLD PORT Modem/Fax Ext.....\$47.55

AST SixPack 286 OK.....\$96.60

INTEL Above Board Plus 8 w/2 MB.....\$399.71

INTEL Above Board Plus 512K.....\$279.16

INTEL Inboard 386/PC.....\$469.60

INTEL SatisfAXion Fax Board.....\$374.50

BATTERY BACKUP AND UPS

AMERICAN

AME-1200VX.....\$735.95 AME-520ES.....\$321.83
AME-360SX.....\$206.89 AME-800RT.....\$552.50
AME-450AT.....\$261.79 AME-600LS.....\$449.19
AME-Smart 400.....\$305.42 AME-Smart 900.....\$609.12

Durant Technologies, Inc.

BPS-300.....\$219.55 BPS-550.....\$356.55
BPS-800.....\$53.30 BPS-1200.....\$706.66

NEWLINE

BC-450.....\$259.22 4 Outlet.....\$44.25
BC-1200 LAN.....\$62.22 LC-1200.....\$136.77
BC-325 Wait BU.....\$209.72 Command Console.....\$69.50

WINDOWS SOFTWARE

MICROSOFT Windows 3.0.....\$93.79

ADOBE TypeManager For Windows.....63.50

ALDUS Pagemaker 4.0 for Windows 3.0.....496.62

ASYMETRIX Toolbook.....279.00

BITSTREAM Facelift for Windows.....59.50

BLTH Omniss 5 for Windows.....592.33

BUMBLEBEE DB Fast for Windows.....188.75

CAERE Omnipage 386.....425.55

CAERE Omnipage Professional.....599.32

CALERA Wordscan 4 for Windows.....596.18

COREL SYSTEMS Core Draw.....365.55

CROSSTALK for Windows 3.0.....119.85

DELFINA Per. Form Pro for Windows 3.0.....299.84

DELFINA Per. Form Pro for Windows 3.0.....119.42

DMP PC Anywhere IV.....98.85

HDC First Apps for Windows 3.0.....48.31

HDC Windows Express.....48.31

IBM Current for Windows.....217.73

INFORMIX Wingz for Windows.....299.20

LOTUS AMI Professional for Windows 3.0.....121.59

LOTUS AMI Professional for Windows 3.0.....289.75

MICROGRAFX Designer 3.1 for Windows.....458.95

MICROGRAFX X-Port for Windows 3.0.....134.42

MICROGRAFX Draw for Windows 3.0.....148.98

MICROGRAFX X Chansma.....309.23

MICROSOFT Excel for Windows V3.0.....297.09

MICROSOFT PowerPoint for Windows 3.0.....297.65

MICROSOFT Productivity Pack for Windows.....39.20

MICROSOFT Project for Windows 3.0.....419.77

MICROSOFT Windows 3.0 Developers Kit.....297.20

MICROSOFT Word for Windows 3.0.....297.89

PRECISION SFT. Superbase 4 for Windows.....399.33

REFERENCE Grammatik for Windows.....58.36

XEROX Ventura G4 for Windows 3.0.....499.24

XEROX Formbase for Windows.....298.33

ZSOFT Soft Type Fonts.....108.86

MONO & COLOR MONITORS

CDW™ Color / Mono Cards w/P.....\$99.00

SAMSUNG 12" Amber.....\$84.10

SAMSUNG 14" White.....\$104.30

SAMSUNG RGB Color.....\$209.36

VGA & EGA PRODUCTS

VGA & EGA MONITORS

CALCOMP 3060 20" MultiSync 1280 x 1024.....CALL
MAGNAVOX Super VGA 28mm 7CM321.....\$39.40
MAGNAVOX CM9032 42mm VGA Color.....\$249.50
MAGNAVOX 7BM749 Mono 14" VGA.....\$119.50
NEC Multisync 4D/5D.....\$959.91 / \$229.43
NEC Multisync 2A / Multisync 3DS.....\$449.26 / \$609.67
PACKARD BELL 8508 42mm.....\$218.41
PACKARD BELL 8509 31mm.....\$298.98
PANASONIC C1381 1024X768 14".....\$338.20
PACKARD BELL 8528 1024X768.....\$335.56
PGS Ultrasync 14.....\$499.66
SAMSUNG VGA 31mm CVJ 4891.....\$319.50
SAMSUNG CSA 7571 17".....\$856.92
SONY 1320 / 1304.....\$429.50 / \$566.35
ZENITH Z-1492.....\$590.80

VGA & EGA DISPLAY CARDS

ATI VGA Wonder XL 1 MB/512.....\$279.63/219.32

ATI Integra.....\$110.00

ATI Basic 16 VGA.....\$8.39

ATI 8514 Ultra 1 MB.....\$509.11

BOGA Basic VGA.....\$68.55

PARADISE V10 256K / 512K.....\$183.91 / \$220.15

PARADISE VGA / VGA + 16.....\$126.43/149.42

ORCHID Prodesigner IIS 512K.....\$254.52

ORCHID Prodesigner IIS 1MB.....\$264.52

VIDEO 7 1024/512K.....\$158.37

VIDEO 7 VRAM II VGA 1 MB.....\$299.50

VIDEO 7 VGA 16.....\$109.20

VIDEO 7 VRAM II 512K.....\$238.30



"Dave sez... all ACP drives include no-hassle 30-Day Guarantee* and 1-Year Replacement policy.*"

Hard Drives!



the Hard Drive King!

Western Digital

40Mb.... \$249. ^{w/AT Kit} Bare \$209.

WD93044A, 28ms, IDE

80Mb.... \$389. ^{w/AT Kit} Bare \$349.

WDAC280, 17ms, IDE

CONNER

AT Embedded Hard Drives

CP2024 21.4Mb, 23ms \$ 399.

CP3000 42.8Mb, 28ms 239.

CP3184 84Mb, 25ms 459.

CP30104 120Mb, 18ms 549.

CP3104 104.9Mb, 25ms 449.

CP3204 209.7Mb, 19ms 799.

SCSI Hard Drives

CP3040 42.8Mb, 25ms, 1" .. \$ 289.

CP3100 104.9Mb, 25ms 489.

CP3200 209.7Mb, 19ms 849.

...call for controllers and adaptors



Tape Backup

Colorado Killer!!!

BACKTRAX **\$299.**
Phantom 750

Twice the storage as Colorado...
250Mb (internal). Reg. Retail \$379.

KALOK Hard Drives

Model	Size and description	AT Kit	Bare
KL320	21.4 Mb, 40ms, 3.5", HH, MFM	\$ Call.	\$ 149.
KL330	30 Mb, 40m, RLL, HH	Call.	169.
KL343	42.57 Mb, 30ms, 3.5" AT, Embedded	259.	219.

...specify Gray or Black Faceplates for 5-1/4" installation kits

MICROPOLIS ESDI/SCSI Drives

Model	Size and description	PC PAK	Bare
MC1355	159 Mb, 23ms, ESDI, 5-1/4", FH	\$ 562.	\$ 478.
MC1654-7D	161 Mb, 16ms, ESDI, 5-1/4", HH	935.	799.
MC1558-15	338 Mb, 18ms, ESDI, 5-1/4", FH	1414.	1254.
MC1664-7	345 Mb, ESDI, 5-1/4", HH	1395.	1275.
MC1568-15	676 Mb, 16ms, ESDI, 5-1/4", FH	1995.	1875.
MC1375	153 Mb, 23ms, SCSI, 5-1/4", FH	562.	478.
MC1674-7D	158 Mb, 23ms, SCSI, 5-1/4", FH	Call.	975.
MC1578-15	332 Mb, 18ms, SCSI, 5-1/4", FH	1472.	1268.
MC1684-7	345 Mb, 14ms, SCSI, 5-1/4", FH	1395.	1275.
MC1588-15D	668 Mb, 16ms, SCSI, 5-1/4", FH	1995.	1875.
MC1598-15	1049 Mb, 14ms, SCSI, 5-1/4", FH	2795.	2695.
MC1528-15	1345 Mb, 14.5ms, SCSI, 5-1/4", FH..	3995.	3895.

PC PAKS inc. controller/cables/mount hardware/software/manual

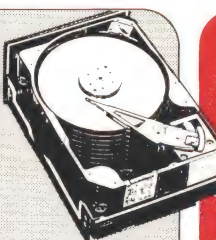
Maxtor® **\$249. \$339.**
Hard Drive Sale 40Mb, M7040A 80 Mb, M7080A

TOSHIBA Hard Drive

104Mb

\$499.

22ms, 3-1/2", HH, IDE, MK 234



Floppy Drives

Toshiba TEAC

360K 5-1/4" .. \$54. \$59.

720K 3-1/2" .. 59. 64.

1.2Mb 5-1/4" .. 69. 74.

1.44Mb 3-1/2" .. 69. 74.

Hard Drives • Card Drives • Tape Backups • Controllers

Never a surcharge at ACP! Government, Institutional, OEM orders welcomed!



Advanced Computer Products, inc.

1310 E. Edinger, Santa Ana, CA 92705 • FAX 714-558-1603 • Customer Service 714-558-1356 • Sales 714-558-8813
We accept MC/VISA/AMEX. no surcharge for credit cards. Your card not charged until we ship. *Our 30 Day Guarantee does not refund shipping and handling charges. Drive must be in original package and in original undamaged condition, 1 Year replacement may have same restrictions. Prices and availability subject to change without notice. We ship FEDEX or UPS.

call your order toll-free 800-FONE-ACP



Circle 20 on reader service card

PC Magazine says "...Arlington offers worry-free mail order purchasing at reasonable rates!"

HEWLETT-PACKARD

Laserjet III w/Toner	..... \$1549
Laserjet IIP w/Toner	..... \$869
Laserjet IIIP w/Toner	..... \$1069
1MG Upgrade	..... \$99
2MG Upgrade	..... \$139
4MG Upgrade	..... \$229
Deskjet 500	..... \$499
Pacific Page/XL	..... \$329/\$699
Pacific CFL	..... \$259
Pacific Data 25 in 1 Font	..... \$249

EPSON PRINTERS

LX810	..... \$155	LQ570	... \$269	LQ2550	.. \$849
FX850	..... \$289	LQ860	... \$549	EPL7000	.. \$789
FX1050	..... \$395	LQ870	... \$435	EPL7500	.. \$1959
LQ200	... \$229	LQ1010	.. \$359	DFX5000	.. \$1269
LQ510	... \$245	LQ1070	.. \$569	DFX8000	.. \$2139

OKIDATA PRINTERS

ML320	... \$319	ML390	... \$439	OLC 400	.. \$639
ML321	... \$439	ML391	... \$599	OLC 800	.. \$939
ML380	... \$219	ML393	... \$919	OLC 820	.. \$1249

PANASONIC

1123	..... \$219	1695	..... \$369
11241	..... \$275	2624	..... \$439
1180	..... \$149	4420	..... \$789
1624	..... \$349	4450I	.. \$1089
1654	..... \$539	4455	..... \$1979
4420/4450I	2MG Memory	..	\$159

CITIZEN

GSX140	.. \$279	GSX200	.. \$159
GSX145	.. \$399	HSP500	.. \$299

ARLINGTON COMPUTERS

386 SX-16, 1.2 Floppy, 1MG,
40 MG, VGA Mono Monitor **\$999**

386-25, 2MG, 1.2 Floppy, 40 MG,
VGA Mono Monitor **\$1299**

386-33W/64K Cache, 4MG, 89 MG,
VGA Mono Monitor **\$1599**

NOTEBOOKS

AST 43V, 386, 40 MG	.. \$2799
Epson NB3S, 40 MG	.. \$2999
Panasonic CF170, 10 MHz, 20MB	..... CALL
Panasonic CF270, 16 MHz, 20MG, VGA	... CALL
Panasonic CF370H6 386SX-20, 60MG, VGA	.. CALL

GOLDSTAR

286, 12 MHz, 1 MG Memory, 40MG, VGA Monitor	..... \$949
386SX, 16 MHz, 1MG, 40MG, VGA Monitor	.... \$1099
386SX, 20 MHz, 1MG, 40MG, VGA Monitor	.... \$1249
386 Tower, 33 MHz, 4 MG Memory	..... \$1599
Laptop - 386SX, 40 MG, VGA	..... \$1649

IBM PS II

Model 30, 286, 40 MB, w/Monitor	..... \$1699
Model 55SX, w/60 MB w/Monitor	..... \$2149
Model 70, (20 MHz), w/60 MB and Monitor	.. \$3049
Model 70, w/121 MB and Monitor	..... \$3399
Model 70-A21, w/121 MB and Monitor	..... \$4699
6 Month Warranty	

COMPAQ

Model 386S w/40 MB	.. \$1899
Model 386E w/40 MB	.. \$2499
Model 386E w/100 MB	.. \$2699
Model 386 25E w/100 MB	..... \$3749
386-33L, w/120 MB	..... \$5199
LTE 20	..... \$1699
LTE 286 20/40	... \$2099/\$2399
LTE 386-60MB	..... \$3999
6 Month Warranty	

MULTIFUNCTION BOARDS

AST 6 Pack w/384K	..... \$159
AST Rampage Plus	..... \$329
Irma Board III	..... \$399
AST 5251-II Plus	..... \$449



Intel Above Board+	..... \$289
Intel Plus 8 w/2 MG	..... \$429
Intel 386 PC w/1 MG	..... \$459
Intel Satisfaction	..... \$369
Intel Snap-In 386	..... \$369

SCAN. & DIGIT.

Epson ES300C	..... \$999
Panasonic FXRS 3070U	.. \$939
Summasketch 12x12	..... \$319
Summasketch 12x18	..... \$559
Panafax PD-2300	..... \$539

DRIVES & TAPES

Ext. 5 1/4" for PSII	..... \$159
Ext. 1.2 for PSII	..... \$169
Toshiba 3 1/2" 720K	..... \$69
Toshiba 3 1/2" 1.44	..... \$69
Colorado Jumbo 120	..... \$249
Everex 40 MB Tape	..... \$239
Everex 60 MB Tape	..... \$599

SEAGATE HARD DISKS

48 MB 3 1/2 (157N-Kit)	..... \$279
40 MB (157A)	..... \$189
40 MB for AT (ST251-1)	.. \$229
80 MB for AT (4096)	..... \$479
80 MG 296 Kit	..... \$369
89 MG 1102A	..... \$299
211 MG 1239	..... \$699

IOMEGA

20 MB Int. w/boot card	.. \$999
44 MB Int. w/boot card	.. \$1099

PLUS

Hard Card 40 MB	..... \$549
Hard Card 50 XL	..... \$379
Hard Card 80 MB	..... \$489
Hard Card 105 MB	..... \$569

CONNOR HARD DRIVES

40 MB	..... \$229
100 MB/200MB	... \$399/\$659

MODEMS

Hayes 1200/2400 Ext	\$279/329
V-Series 9600 Int.	..... \$499
Hayes Ultra 96	..... \$639
Intel 2400	..... \$139
Intel 2400 Ext.	..... \$159
Intel 2400 Ext. MNP	..... \$209
Intel 9600 Ext.	..... \$479
Mghtz 2400 Tosh/CPQ	.. \$129
Everex 2400	..... \$89
Everex 2400 External	.. \$169
US Robotics 9600	..... \$569
US Robotics Dual Std	.. \$829

CHIPS

256K/1 MG Chips	each \$4/\$7
256K/1MB Simms	..... \$30/\$59
Compaq 386 4 MB	..... \$299
Compaq 386 2 MB-33	.. \$179
Compaq SLT 2 MB	..... \$249
Compaq LTE 2MB	..... \$179
Compaq LTE 386 4MB	.. \$499
Compaq Port 2MB	..... \$275
IBM 2-8 MG Board	..... \$379
IBM 30-286 512K	..... \$69
IBM 70 & 80 2 MB	..... \$139
IIT 2C87-12	..... \$79
IIT 3C87-20/25	..... \$149
Toshiba Port 2MB	..... \$139



Intel 8087-2	..... \$109
80287-10XL/XLT	..... \$89
80387-16/80387-SX	.. \$195/\$129
80387 SX-20	..... \$139
80387-20	..... \$195
80387-25/80387-33	.. \$195/\$195
80487 SX	..... \$449

NETWORKING

Network 2.2 5 User	..... \$579
Network 2.2 10 User	.. \$1199
Network 2.2 50 User	.. \$1999
Lantastic 10MG Starter	.. \$469
E143 Ethernet	..... \$209
NE1000 Ethernet	..... \$149
NE2000	..... \$179
Ethercard +/+16	... \$139/\$169
EtherLink II 3 Com	..... \$189

SOFTWARE

D Base IV	..... \$479
Harvard Graphics	..... \$299
Lotus 123 2.2/3.1	.. \$329/\$389
Microsoft Mouse	..... \$99
Microsoft Excel	..... \$299
Microsoft Windows 3.0	.. \$89
Microsoft DOS 5.0	..... \$89
Multimate Version IV	.. \$239
R Base for DOS	..... \$439
Symphony	..... \$459
Ventura Desktop Publ.	.. \$519
Word Perfect 5.1	..... \$249

VIDEO BOARDS

ATI 16 Basic	..... \$89
ATI VGA Wonder	..... \$179
ATI VGA Wonder 512	.. \$199
ATI 8514 1MG	..... \$489
Epson VGA 16 Bit	..... \$79
Genoa 6300/6400	.. \$169/\$219
Hercules Station	..... \$649
NEC Grph Engine 256	.. \$899
Orchid Pro II	..... \$269
Paradise VGA 1024	..... \$139
Paradise +16	..... \$129
STB Power IMG	..... \$199

MONITORS

MITSUBISHI

EGA	..... \$329
Diamond Scan	..... \$489
HL6615 16"	..... \$1029
HL6935 20"	..... \$1789
3950 ADK	..... \$1649

NEC

Multisync IIA	..... \$429
Multisync IIID	..... \$599
Multisync IVD	..... \$979
Multisync VD	..... \$2199

PANASONIC

1381 VGA 1024x768	..... \$329
1391 VGA 1024x768	..... \$499
1395 VGA 1024x768	..... \$539

GOLDSTAR

Color/EGA	..... \$199/\$269
VGA 1425+/1430	... \$279/\$299
VGA 1460	..... \$329

**Arlington
Computer
Products, inc.**

Defective software will be replaced with the same item only. We cannot guarantee compatibility. Returned shipments are subject to a restocking fee. Prices and availability subject to change without notice.

HOURS C.S.T.
7:30 - 6:30 pm - Mon.-Fri.
9:00 - 1:00 pm - Saturday

1970 CARBOY
MT. PROSPECT, IL 60056

Circle 8 on reader service card

FOR ORDERS & SYSTEMS QUOTES:



800-548-5105

CUSTOMER SERVICE AND IN ILLINOIS **708-228-6333**

SHIPPING **708-228-9748**

TECHNICAL ASSISTANCE **708-228-1470**

We Export! FAX **708-228-0516**

No surcharge for MasterCard or Visa.

STOP MICRO



WE'LL MEET OR BEAT ANY ADVERTISED PRICE!

60 Day Money Back Guarantee • 2 Year Parts & Labor • Free Shipping To/From On Any Product Serviced By Us

HARD DRIVES

Seagate

Model Name	Description
ST228 (MFM)	45MB 28ms 3.5" hh \$ 199
ST157R-1 (RLI)	49MB 28ms 3.5" 205
ST251-1 (MFM)	42MB 28ms hh 238
ST157A (IDE)	44MB 28ms 3.5" 205
ST1102A (IDE)	84MB 20ms hh 319
ST1144A (IDE)	125MB 20ms hh 415
ST1239A (IDE)	211MB 15ms 3.5" 699
ST2383E (ESDI)	337MB 15ms hh 1,295

All other Seagate models available.

Conner

CP3024 (IDE)	21MB 27ms 3.5" \$ 230
CP3000 (IDE)	42MB 28ms 3.5" 250
CP3184 (IDE)	84MB 25ms 3.5" 410
CP30104 (IDE)	120MB 17ms 3.5" 465
CP3204 (IDE)	209MB 16ms 3.5" 710

Maxtor

XT4170E (ESDI)	157MB 14ms fh \$ 745
XT4230E (ESDI)	203MB 16ms fh 855
XT8380E (ESDI)	360MB 14ms fh 1,175
7040A (IDE)	42MB 19ms 3.5" 230
7080A (IDE)	81MB 19ms 3.5" 345

FLOPPY DRIVES

TEAC

1.44MB 3.5" w/ kit	..... \$ 69
1.2MB 5.25"	..... 69
360K 5.25"	..... 59

POWER SUPPLIES

Super quiet! Super cool!

Desktop

150/165 Watt XT	..... \$ 38
200 Watt AT	Fits Baby AT 48
230 Watt AT	Fits Full Size 55

Tower

230 Watt AT	Fits Full Size \$ 55
230 Watt XT/AT	Fits Mini Tower 55

KEYBOARDS/MICE

2001 101-Key Enhanced Click Style w/ Cover	..... \$ 55
Logitech C9 Serial/Bus Mouse	..... 69/79
Genius Serial Mouse	..... 23
Logitech Track Man	..... 109
Logitech Scan Man Plus	..... 195
OCR Software (for hand scanner)	..... 79
OCR Software (deluxe version)	..... 130

CASES

Desktop Cases

High quality!

Baby Size AT	5-Bay Case \$ 50
Full Size AT	5-Bay Case 52

Tower Cases

Mini-Tower w/ 200W PS	..... \$ 110
Full-Tower w/ 230W PS Digital Readout!	.. 169

16 MHz 386SX VGA

Desktop 4 Bay Case	14" 640 x 480
1 MB RAM	Color Monitor
1.2MB 5.25" Drive	1 Parallel & 2
40MB 17msec IDE Drive	Serial Ports
16 Bit VGA	101 Key Keyboard

\$1,375

386-25 MHz VGA

1 MB RAM	14" VGA Color
AMI bios w/ setup	Monitor
1.2MB 5.25" Drive	16-bit VGA card
1.44MB 3.5" Drive	(1024x768)
80MB Hard Drive IDE	2 ser/1 par/1 game

\$1,650

MEMORY

Intel

80287-8 Math Co-Processor	..... CALL
80287-10 Math Co-Processor	..... CALL
80387SX Math Co-Processor	..... CALL
80387-25 Math Co-Processor	..... CALL
80387-33 Math Co-Processor	..... CALL
640K RAM	..... CALL
1MB DRAM 80/100/120 ns	..... CALL
1MB SIPP Module 80ns	..... CALL
1MB SIMM Module 80ns	..... CALL

VIDEO GRAPHICS

Video Boards Priced Fully Populated!

MONO Monographics w/ Printer Port	..... \$ 29
VGA AT/XT w/ Software	..... 70
SVGA AT/XT (1024x768) 512KB	..... 89
SVGA AT/XT (1024x768) 1MB VGA Card!	..... 149
ATI Wonder Plus VGA	..... CALL
NEC Graphics Engine Board	..... 910
Orchid Pro VGA 512KB	..... CALL
Paradise VGA Plus 16	..... 185

MONITORS

NEC

Sony

Multisync 2A VGA	..... \$ 460
Multisync 3D VGA	..... 580
Multisync 4D VGA	..... 995
Multisync 5D VGA	..... CALL
CPD1320	..... \$ 465
CPD1302	..... 590
CPD1304	..... 625
GVM2000	..... 1,455

Samsung

MA-2565 12" Mono	..... \$ 75
MZ-4571 Flat Screen 14" Mono TTL	..... 115
ML-4571 Flat Screen 14" Mono VGA	..... 125
CJ-4685 VGA (640x480) 0.41 dot pitch 14"	..... 275
CJ-4891 VGA (640x480) 0.31 dot pitch 14"	..... 325
CSA7571 Syncmaster 4 color 17" Multiscan 0.31 (1024x768) Analog TTL	..... 830

DISK CONTROLLERS

Western Digital

1006VMM1 (MFM) AT 1:1	.....
2 Hard Drive Only	..... \$ 50
1006VMM2 (MFM) AT 1:1	.....
2 Hard/2 Floppy	..... 75
XTGEN 2Plus (MFM) XT Card	.....
Up to 2 Hard Disks	..... 40
1004A27X (RLI) XT Card	.....
Up to 2 Hard Disks	..... 49
ESDI Controllers	..... CALL
IDE Disk Controllers	.....
2 Hard/2 Floppy	..... \$ 28
2 Hard/4 Floppy	..... 38
2 Hard/2 Floppy w/ 1 Parallel, 2 Serial, and 1 Game!	..... 48
Floppy Controllers	.....
XT/AT High Density: Up to 4 Hi-Density Floppies!	..... \$ 33
XT Floppy Controller	..... 25

MODEMS

Smartlink 2400B Internal/External	..... \$ 79/89
Everex 2400B Int/Ext	..... 90/159
Hayes 2400B w/ software Internal	..... 279
US Robotics 2400B Int/Ext	..... 130/150

PRINTERS

Hewlett Packard

We'll match any advertised PC World price!

Laserjet IIIp	..... \$ 999
Laserjet IIP	..... 919
Laserjet III	..... CALL
Laserjet IIId	..... CALL
Laserjet IIISi 17ppm 1MB	..... CALL
Desk Jet 500	..... CALL
Scan Jet Plus 320DPI w/ IBM interface	..... 1499
Paint Jet Color Ink Printer (ser/parallel)	..... 1525
Paint Jet XL	..... CALL

Accessories available, please enquire.

H-P Memory Compatible

IIP/IIIP	1MB \$ 105
	2MB 150
	3MB 269
	4MB 340
III	1MB 195
	2MB 330

Citizen

GSX-140	..... CALL
GSX-145	..... CALL

All other models available.

Epson

LQ810 200cps 30NQLQ	..... \$ 178
FX850 264cps, 54NQLQ	..... 295
LQ2550 400cps, 108NQLQ	..... 865
EPL6000	..... CALL

All other models available.

LAPTOPS

Toshiba

1000SE	..... \$ 999
1000XL/LE	..... CALL
1200XE 20MB/40MB	..... CALL
2000SX 20MB/40MB	..... CALL
3100SX	..... CALL
3100E 20MB/40MB	..... CALL
3200SX	..... CALL
5200 40MB/100MB	..... CALL

Laptop memory also available.

MOTHERBOARDS

With memory and CPU.

386-33 Mhz Cache 32-bit Power w/ 64K Cache! Full size board expandable to 16 Megabytes of Memory!	..... CALL
386-25 Mhz Cache 32-bit Power w/ 64K Cache! Baby sized motherboard expandable to 8 Meg	..... CALL
386SX-16 Mhz	.....
Up to 8 Meg - Baby sized	..... \$ 260

All other motherboards available, please call.

MULTI I/O

AT Card	2 Serial, 1 Parallel, 1 Game .. \$ 20
XT Card	1 Serial, 1 Parallel, 1 Game, Clock, Calendar, and Battery 27
XT Plus	1 Serial, 1 Parallel, 1 Game, Clock, Calendar, w/ Battery 32
Intel/AST	All models CALL

TERMS AND CONDITIONS: NO SURCHARGE FOR MC OR VISA. TERMS: MC - VISA - COD - CASH - P.O.s FROM QUALIFIED FIRMS, 20% RESTOCKING FEE ON NON-DEFECTIVE RETURNS. PRICES SUBJECT TO CHANGE.



CALL NOW!
1-800-876-1786

Circle 209 on reader service card

14126 Sherman Way, #345
Van Nuys, CA 91401
(818) 782-6691 Fax (818) 782-3202
Hours: M-F 7:30-5:00 PST

Smart PC Buyers ... Call Blackship.

If you are looking for the best buy in a PC for your office or your home, the name to remember is Blackship. We have the "**Best Buy**" reputation that is unbeatable. Not only can you virtually design the configuration you want and need to grow with, you can buy it at off-the-shelf prices.

You always get top quality and quick turnaround on your order when you call our toll-free order desk number.

All Blackship computers have :

- 1-year parts and labor warranty
- 1-year GE on-site service at most locations
- 30-day money-back guarantee
- Unlimited toll-free technical support

Don't just take our word for it.



**ONSITE
SERVICE**

GE Computer Service

Recent Awards



**For all your
networking and
custom configura-
tions, call us.**

"Blackships' 386-25...fine-performing machine...reasonable price...good customer service...a good buy for workstation shoppers"—*PC Magazine* 1/25/91

"The Blackship 386SX-20 is a highly desirable system both in performance and price."—*PC Magazine* 11/27/90

"Of our seven contenders, the Blackship 486-25 machine earned the top value."—*InfoWorld* 3/12/90

"...its price/performance ratio easily justifies PC Worlds Best Buy recommendation."—*PC World* 8/88

Toll-Free Order Desk

1-800-877-6249



BLACKSHIP
COMPUTER SYSTEMS, INC.

Notebook/Laptop

386SX/20 Laptop \$2395

386SX/20 Notebook \$2295

286/12 Laptop (CGA) \$1595

Laptop

- 1 MB RAM
- 1.44 MB 3.5" Floppy Drive
- 40 MB IDE Hard Drive
- VGA 640 x 400, 16 Shades of Gray
- 2 Serial, 1 Parallel Port
- MS DOS 4.01
- Ni-Cd Rechargeable Battery
- Weight 14.7 lbs

Notebook **NEW**

- 1 MB RAM
- 1.44 MB 3.5" Floppy Drive
- 20 MB 17 ms IDE Hard Drive
- VGA 640 x 400, 32 Shades of Gray
- 1 Serial, 1 Parallel Port
- MS DOS 4.01
- Carrying Case
- Weight 6.5 lbs

486 SVGA Systems

- 64K Cache RAM
 - 4 MB RAM
 - 1.2 MB 5.25" Floppy Drive
 - 1.44 MB 3.2" Floppy Drive
 - 200 MB 15 ms IDE Hard Drive
 - 16-bit VGA with 1 MB
 - 14" 1024 x 768 SVGA Monitor
 - 1 Parallel, 2 Serial, 1 Game Port
 - 101-key Keyboard
 - MS DOS 3.3 or 4.01
- | | |
|--------------------|---------------|
| 486/25 ISA | \$3195 |
| 486/25 EISA | \$3895 |
| 486/33 ISA | \$3595 |
| 486/33 EISA | \$4395 |

386SX/286 Systems

- 2MB RAM
 - 1.2 MB 5.25" Floppy Drive
 - 1.44 MB 3.2" Floppy Drive
 - 40 MB IDE Hard Drive
 - 16-bit VGA with 256K
 - 14" VGA Color Monitor
 - 1 Parallel, 2 Serial, 1 Game Port
 - 101-key Keyboard
 - MS DOS 3.3 or 4.01
- | | |
|-----------------|---------------|
| 386SX/20 | \$1595 |
| 386SX/16 | \$1445 |
| 286/16 | \$1345 |
| 286/12 | \$1295 |

386 SVGA Systems

- 64K Cache RAM
 - 4 MB RAM
 - 1.2 MB 5.25" Floppy Drive
 - 1.44 MB 3.2" Floppy Drive
 - 120 MB 18 ms IDE Hard Drive
 - 16-bit VGA with 1 MB
 - 14" 1024 x 768 SVGA Monitor
 - 1 Parallel, 2 Serial, 1 Game Port
 - 101-key Keyboard
 - MS DOS 3.3 or 4.01
- | | |
|--------------------------|---------------|
| 386/40 NEW | \$2595 |
| 386/33 | \$2395 |
| 386/25 | \$2295 |
| 386/25 (No Cache) | \$2195 |

Blackship Computer Systems, Inc. • 4031 Clipper Court • Fremont, CA 94538 • Tel: 415-770-9300 • Fax: 415-770-8674
Prices are subject to change without notice.

Circle 1 on reader service card

K E N O S H A

We Export!

EPSON PRINTERS

LX 810	.....\$155	LQ 850	.....\$435
FX 850	.....\$289	LQ 860	.....\$549
FX 1050	.....\$395	LQ870	.....\$435
LQ 200	.....\$229	LQ 1010	.....\$359
LQ 510	.....\$245	LQ 1070	.....\$569
LQ570	.....\$269	LQ 2550	.....\$849
EPL7000	— Laser Printer .....\$789		
EPL7500	— Postscript Printer .....\$1950		
DFX 5000	— 533 cps, 160 nlq .....\$1269		
DFX 8000	— 1066 cps, 160 nlq .....\$2139		

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN

1-800-255-2989

Shipping, customer service &
technical assistance call
414-697-9595

Fax 414-697-0620



AST COMPUTERS

AST Premium Exec Notebook .CALL
386 BRAVO 3V SX20— w/40 MB,
& VGA card\$1829
386 PREMIUM II SX — 20 Mhz
w/40 MB & VGA Card\$1899
486-25 BRAVO MOD 5
w/90 MB & VGA card\$3550
486-33E PREMIUM MOD 5
w/90 MB & VGA card\$5099
All other models & configurations Call

KCC COMPUTERS

386SX/16, 1.2 MG Floppy, 1 MG RAM,
40 MG Hard Drive\$879
386-25, 2 MG RAM, 1.2 MG Floppy,
40 MG\$1179
386-25 with 64K Cache, 1.2 MG Floppy,
40 MG\$1299
386-33 with 64K Cache, 4 MG RAM,
89 MG Hard Drive\$1479

ALL SYSTEMS COME WITH INTEL'S CPU
**We will custom configure our
computer with the name brand
peripherals of your choice —
Call for a Quote!**

FOR ALL YOUR LASER PRINTER NEEDS

HEWLETT-PACKARD

LaserJet IIIP w/toner	..\$1069	LaserJet III w/toner	..\$1545
LaserJet IIP w/toner	..\$869	Deskjet Plus 500	.....\$499
25-in-1 Font	.....\$249	1 MB Upgrade	.....\$99
172 fonts & symbol sets		2 MB Upgrade	.....\$139
Pacific Page	.....\$329	4 MB Upgrade	.....\$229
PostScript® language		Pacific Type	.....\$259
emulation in a cartridge		40 additional scaleable fonts for	
Complete Font Library	..\$259	Laser Jet III	
51 scaleable fonts for Laser Jet III		Pacific Page XL	.....\$699
Plotter in a Cartridge	..\$229	Includes Intel's 960 Micro-	
Plotter emulation for the		processor and 2 MG Memory.	
Laser Jet Series II™		Up to 8 times faster than	
		competing products.	

NETWORKING

Netware 2.2 5 User	.....\$579
Netware 2.2 10 User	.....\$1299
Netware 2.2 50 User	.....\$2199
NE1000	.....\$149
NE2000	.....\$179
ARCNET PC 130	.....\$99
ARCNET PC 130E	.....\$129
ARCNET Active Hub/Passive Hub	.....\$289/79
ARCNET PC 500FS	.....\$305
ARCNET PC 500WS	.....\$235
Thomas Conrad 6142 8-bit	.....\$119
Thomas Conrad 6045 16-bit	.....\$259
LANTASTIC	
2MB Starter Kit/Adapter	.....\$349/145
10MB Ethernet Starter Kit	.....\$469
Adapter	.....\$209
Accessories	.....Call

PANASONIC

1123/1124i	.....\$219/275
1180/1191	.....\$149/219
1624/1654	.....\$349/539
2264	.....\$459
4420/4450i	.....\$799/1099
4455 Postscript Laser	.....\$1979
1mg. Upgrade for 4420 & 4450i	.....\$139
C1381 1024 x 768 VGA Monitor	.....\$329
C1391 Multisync	.....\$499
CF170 Notebook	.....Call
CF270 Notebook	.....Call

LAPTOPS TOSHIBA

T2000	.....CALL
3100SX/3200SX	.....CALL
5200 40/100	.....CALL
All Other Models	.....CALL

NOTEBOOKS

AST Premium Exec	.....CALL
Panasonic CF170	.....CALL
Panasonic CF270	.....CALL
Epson 386SX Notebook	.....CALL
Everex Tempo LX	.....CALL

LAPTOP MEMORY

1 MB Compaq LTE 286	.....\$119
2 MB Compaq LTE 286	.....\$185
1 MB Compaq SLT 286	.....\$169
2 MB Toshiba T1600	.....\$169
2 MB Toshiba T3200SX	.....\$189
2 MB Toshiba 5200	.....\$189
AST Premium Exec 4MG	.....\$379
All other models	.....CALL



LAPTOP MODEMS

Toshiba 2400 Internal\$129
Zenith, Compaq, NEC, Sharp, Epson
and other modelsCALL

DIGITIZERS

Summasketch 12x12	.....\$319
Summasketch 12x18	.....\$569

HARD DISKS SEAGATE

20MB w/contr. ST225	.....\$239
30MB w/contr. ST238	.....\$259
40MB for AT ST251-1	.....\$249
40MB 157A Kit	.....\$249
80MB for AT ST296N Kit	.....\$369
89MB 1102A	.....\$299
211MB 1239	.....\$699

PLUS HARD CARDS

20MB/40MB	.....\$489/\$549
80MB	.....\$589
Hardcard 50 XL	.....\$379
Hardcard 105MB	.....\$569

CONNER

40MB/100MB\$229/\$399
------------	------------------

TAPE BACK UP

Maynard 60MB External	.....\$829
Mountain 40MB Internal	.....\$299
Mountain 40MB External	.....\$559
All other models	.....CALL

MONITORS

Mitsubishi EGA	.....\$339
Mitsubishi Diamondscan	.....\$489
Mitsubishi HL 6605 16"	.....\$1049
Mitsubishi HL 6935 20"	.....\$1789
NEC Multisync IIA	.....\$449
NEC Multisync IIID	.....\$589
NEC Multisync IVD	.....\$979
NEC Multisync VD	.....\$2099
Panasonic C1381 1024x768	.....\$329
Panasonic C1391 1024x768	.....\$499
All Goldstar Monitors	.....CALL

Prices and
availability
subject to
change

CMS ENHANCEMENTS

Int. and ext. hard drive kits AT
and XT compatible from \$249
PS/2 internal hard drive kits
20MB and up from \$329
PS/2 external hard drive
90MB and up from \$1049
External floppy drives for PS/2
AT, XT and laptop from \$179
Laptop hard drive for Tandy, NEC,
Toshiba, Zenith, CompaqCALL
Fax Modem and Pocket FaxCALL

GRAPHICS CARDS

ATI Basic 16	.....\$89
ATI Wonder Plus VGA	.....\$179
ATI 8514 1MG	.....\$489
Everex VGA VRAM	.....CALL
NEC Graphic Engine	.....\$899
Orchid Pro Designer II	.....\$279
Orchid Pro VGA w/512K	.....\$289
Paradise VGA 1024	.....\$149
Paradise VGA Plus	.....\$139
Paradise VGA Plus 16	.....\$179
STB Power 1MG	.....\$199
Hercules Station	.....\$649

OKIDATA PRINTERS

ML320	.....\$319
ML321	.....\$439
ML380	.....\$219
ML390	.....\$439
ML391	.....\$599
ML393	.....\$919
OLC 400 Laser	.....\$639
OLC 800 Laser	.....\$939
OLC 820 Laser	.....\$1249
Okilaser 400 1MB Upgrade	.....\$139
Okilaser 400 2MB Upgrade	.....\$185



Intel Snap-In 386	.....\$369
80287-XL	.....\$89
80387-16 DX/SX	.....\$195/\$129
80387-20 DX/SX	.....\$195/\$139
80387-25MHz	.....\$195
80387-33MHz	.....\$195
80487-SX	.....\$449
Intel 9600 Ext. Modem	.....\$479
Satisfaxion (Fax Modem)	.....\$369

MEMORY UPGRADES COMPAQ MEMORY

386 1MB/4MB MODULES	.....\$119/\$259
386 1MB/4MB BOARDS	.....\$169/\$329
SLT 286 1MB	.....\$149
LTE 286 2MB	.....\$185
Other Models	.....Call

IBM UPGRADES

2 MB Kit 30-286	.....\$139
2-8 MB BD w/2MB 50,60,70 & 80	.....\$379
All Others	.....Call

CHIPS & LASER UPGRADES

All Simm & Drums	.....Call
Panasonic 1MB/2MB	.....\$139/\$189
OKI LASER 400 1MB/2MB	.....\$139/\$189
IBM 1MB/2MB	.....\$135/\$185
Epson EPL 6&7000 Series	.....\$Call
TI Micromaster	.....\$149

MODEMS

Everex 2400 int/ext	.....\$89/155
Hayes V Series int	.....\$499
Hayes Ultra 9600	.....\$639
Intel 2400 ext	.....\$159
Intel 2400 ext w/MNP	.....\$209
Intel 9600 ext	.....\$479
Practical Perp. Pocket Modem	.....\$109
US Robotics 2400 int/ext	.....\$129/149
US Robotics 14.4 int/ext	.....\$549/569
US Robotics V-32 int/ext	.....\$549/599
US Robotics Dual Std.	.....\$829

No charge for MasterCard or Visa; American Express add 5%. We will ship COD on a cash or cashier's check basis only. Shipping & handling 5% — \$6 minimum. AK and HI slightly higher. 15% restocking charge on returned items. Purchase orders accepted from Fortune 1000, Government institutions, schools and universities. 2% shipping discount available on orders over \$2000 if prepaid by check.

**KENOSHA
COMPUTER CENTER**
2133 91st St.
Kenosha, WI 53140

C O M P U T E R C E N T E R

Circle 41 on reader service card



A Complete 486TM-33 MHz EISA System For Under \$3,000.



You are already familiar with MIS's great price on our fantastic 80386-33MHz system so, now, MIS remains on the forefront of leading edge technology with its 80486-33MHz EISA computer system!

And it's not just another 486TM! MIS incorporates the Micronics motherboard with high quality components to offer the maximum PC at an affordable price. The MIS 486TM-33 EISA supports 80486 CPU burst mode and EISA burst mode for maximum CPU performance and has up to 256K Cache buffer to satisfy DMA requirements on EISA architecture. It also supports up to 64MB of main memory on the motherboard.

MIS 486TM-33MHz EISA STANDARD

- 1MB 80NS SIMM
- INTEL[®] EISA CHIPSET / PHOENIX[®] EISA BIOS
- 64K EXTERNAL SRAM CACHE
- WEITEK[®] MATH CO-PROCESSOR SOCKET
- TEAC[®] 5.25" 1.2MB FLOPPY DRIVE
- TEAC[®] 3.5" 1.44MB FLOPPY DRIVE
- 43MB AT HARD DISK DRIVE
- 2 SERIAL, 1 PARALLEL AND 1 GAME PORTS
- MGP ADAPTER
- SAMSUNG[®] 12" AMBER MONITOR
- MICROSOFT[®] COMPATIBLE SERIAL MOUSE
- NMB[®] 101-KEY ENHANCED KEYBOARD
- DESKTOP CASE WITH FIVE DRIVE BAYS
- 220W POWER SUPPLY
- ONE YEAR PARTS AND LABOR WARRANTY
- 30-DAY MONEY BACK GUARANTEE

\$2,995

Performing with 32 bit I/O power, the MIS 486TM-33 EISA computer gives you RISC performance with ASIC architecture at a fraction of the cost. It is the ideal platform for UNIX/Xenix as well as high performance CAD/CAM applications.

486-25MHz EISA STANDARD System	\$3,595
486-33MHz ISA STANDARD System	\$2,995
486-25MHz ISA STANDARD System	\$2,595
386-33 MHz STANDARD System w/ 32K Cache	\$1,995
386-25MHz STANDARD System w/ 32K Cache	\$1,845
386-25MHz STANDARD System (Non-Cache)	\$1,595
386SX-20MHz STANDARD System (Non-Cache)	\$1,195
386SX-16MHz STANDARD System (Non-Cache)	\$1,145
286-12MHz STANDARD System	\$ 895

VGA (640x480) Upgrade	Add	\$ 360
P-VGA (1024x768) Upgrade	Add	\$ 450
80MB/105MB/212MB AT Hard Drive Upgrade	Add	\$245/329/745
158MB/380MB/676MB ESDI Hard Drive Upgrade	Add	\$745/1295/1895
RAM Upgrade	Add	\$ 80/MB
64K Cache Upgrade (386-25/33 MHz)	Add	\$ 50
Vertical Case	Add	\$ 125
Mini Vertical Case	Add	\$ 50
CALL FOR ADDITIONAL UPGRADE OPTIONS		

MIS Computer Systems

P.O. Box 70897 Sunnyvale, CA 94086-0897

Order Now

1-800-733-9188

Office Hours: M-F 9:00 am-6:00 pm Pacific Time



Prices and terms are subject to change without notice. 30 days money back does not include shipping charge. CA residents add appropriate sales tax. No surcharge on credit card purchases. Personal and company checks require 2 wks clearance. All names mentioned are registered trademarks of their respective companies.

Circle 172 on reader service card

FastData 386 Systems



FastData 386/33 \$1899

The fastest 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 105 megabyte 17millisecond hard disk, 1024 by 768 VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a one-year warrantee with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- ✓ 33mhz Intel 386-DX processor.
- ✓ 64K high-speed memory cache.
- ✓ 4 megabytes high speed RAM.
- ✓ 105 mb 17ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with speed, keylock and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 230 watt power supply.
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 1mb Video Ram.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ MS-DOS 5.0.
- ✓ Windows & Mouse add \$69.
- ✓ FCC Class B approved.

386/DX33	80mb	100mb	200mb	660mb
Mono	\$1,529	\$1,599	\$1,849	\$3,199
Mono VGA	\$1,629	\$1,699	\$1,949	\$3,299
VGA 1024i	\$1,829	\$1,899	\$2,149	\$3,499
VGA 1024ni	\$1,929	\$1,999	\$2,249	\$3,599



FastData 386/25 \$1699

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand high speed 32 bit processing and expandability. The value of the 386/25 goes far beyond its price; it comes configured with a full four megabytes of fast RAM, a quick 18 millisecond 80 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 1mb VGA board. Also, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere.

Standard Features

- ✓ 25mhz Intel 80386-DX.
- ✓ 4 megabytes of high speed RAM.
- ✓ 80 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis or mini-tower (shown) with keylock, speed and reset buttons.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply.
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ MS-DOS 5.0.
- ✓ Windows & Mouse add \$69.
- ✓ FCC Class B approved.

386/DX25	80mb	100mb	200mb	660mb
Mono	\$1,399	\$1,469	\$1,719	\$3,069
Mono VGA	\$1,499	\$1,569	\$1,819	\$3,169
VGA 1024i	\$1,699	\$1,769	\$2,019	\$3,369
VGA 1024ni	\$1,799	\$1,869	\$2,119	\$3,469

FastData 486/25

Call about our hot 486, now just \$2,399 with 4mb RAM, Super VGA & 100mb drive. Includes a 128K two-stage cache and is expandable to 64mb of memory.

All FastData Systems Include:

- 30 day money-back guarantee
- Toll-free technical support for life
- One year warrantee with on-site service available to most U.S. locations



FastData SX Systems



\$1499 FastData SX/20

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just \$200 more than our SX/16, this machine also includes an 80mb hard drive in addition to the super VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard, DOS 5.0, and two floppy drives. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- ✓ 20mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of high speed RAM.
- ✓ 80 mb 18ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) or mini-tower with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX20	40mb	80mb	100mb	200mb
Mono	\$1,069	\$1,199	\$1,269	\$1,519
Mono VGA	\$1,169	\$1,299	\$1,369	\$1,619
VGA Color	\$1,319	\$1,449	\$1,519	\$1,769
VGA 1024i	\$1,369	\$1,499	\$1,569	\$1,819



\$1299 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit super VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- ✓ 16mhz Intel™ 386-SX processor.
- ✓ 2 megabytes of fast RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard, mini tower, or mini desktop (shown) chassis with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots, 5 drive bays.
- ✓ 80387-SX coprocessor socket.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$69.
- ✓ MS-DOS 5.0.
- ✓ FCC Class B approved.

386/SX16	40mb	80mb	100mb	200mb
Mono	\$999	\$1,129	\$1,199	\$1,449
Mono VGA	\$1,099	\$1,229	\$1,299	\$1,549
VGA Color	\$1,249	\$1,379	\$1,449	\$1,699
VGA 1024i	\$1,299	\$1,429	\$1,499	\$1,749

FASTMICRO

For information or to order call:
1-800-441-FAST

DISK DRIVES

Colorado DJ-10 40-120mb Int. Tape	239
DJ-20 80-240mb Int. Tape	299
Conner (see FastData IDE controllers at right)	
CP3044 40mb IDE 28ms	199
CP3104 100mb IDE 25ms	349
CP3208 200mb IDE 25ms	599



Seagate 89mb AT Kit \$319

IDE performance, big 89 megabyte capacity and Seagate quality make this kit a great buy. A 19ms access time and 5 mbps transfer rate assure great performance. Controller, cables and rails are included to make installation fast and easy.

Irwin SX Int. Tape 40-120mb / 80-250mb	249/349
SX Ext. Tape 40-120mb / 80-250mb	399/499

Micropolis

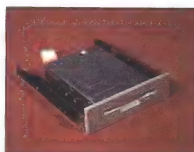
MC1664 340mb ESDI 14ms	1295
MC1598 1.2gb SCSI 14ms	2695

Plus Development

HardCard IXL 50 - 52mb 9 ms 16bit	399
HardCard IXL 105 - 105mb 9 ms 16bit	579

Toshiba 1.44mb Floppy Drive \$59

Complete with mounting brackets and installation instructions, this Toshiba works in all true 286 & 386 compatibles. Will also read/write/format 720K 3.5" disks. Rails, add \$5.



Seagate

30MB XT Kit ST238 w/ cont.	249
40MB AT ST251-1 MFM Drive	229
40MB AT ST157A 28ms IDE Drive	179
80MB AT ST296N SCSI Drive w/adaptor	319
89MB ST1102A 19ms IDE Drive	299
125MB ST1144A 19ms IDE Drive	399
210MB ST1239A 15ms IDE Drive	599
330MB ST2383E 16ms ESDI Drive	1199

Sun Moon Star Ext. CD-ROM Drive Kit

1.2MB 5.25" Floppy	65
1.44MB 3.5" Floppy	65



Toshiba 100mb IDE Kit \$369

Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and built-in 1:1 controller, 16 bit IDE card with dual floppy controller and cables, 5.25" brackets and rails.

Toshiba

360K 5.25" Floppy (Black)	59
1.2MB 5.25" Floppy	59
1.44MB 3.5" Floppy	59
65mb MK134 22ms RLL drive	279
100mb MK234FCH IDE 3.5" drive	349

Western Digital

WD93044 40mb IDE 28ms	199
WDAC280 80mb IDE 20ms	299
WDAP4200 200mb IDE 20ms	649
WE100TV-SE2 ESDI AT 1:1 dual controller	149

Sony CD-ROM Drive \$379

Affordable CD-ROM technology is here! This player reads over 600mb from just one CD and can even play your favorite audio CDs. This internal units works in 286 thru 486 PC's regardless of hard drive type and comes with cable & interface. Add an Encyclopedia, Book of Mammals or game CD for \$49 each.



BOARDS

Artisoft/Lantastic

Lantastic 2mbps Starter Kit - Two Station	349
Lantastic 2mbps Adaptor	139
Lantastic Ethernet Starter Kit - Two Station	499
Lantastic Ethernet Adaptor	209

ATI

2400 ETC Internal / External	129 / 159
8514/Ultra+VGA 1mb	599
9600/E External MNP V.42bis	369
VGA Basic 16	75



Sound Blaster \$149

Sound Blaster does for sound what VGA does for graphics! Supported by the largest software library, Sound Blaster make your games come to life. Also includes a music synthesizer, voice input and sound compression, and MIDI interface. SB Talker even converts text into spoken English. Includes a game port also.

VGA Wonder + 256K / 512K	159 / 189
VGA Wonder XL 256K / 1mb	159 / 269
Brown Wagh Sound Blaster	149

Everex

2400B Int Modem	69
EGA 480 Card	69
RAM3000 16 bit - w/ OK, add \$60/mb max 3mb	75
RAM8000 16 bit - w/ OK, add \$60/mb max 8mb	169

Hayes

JT FAX 4800B Internal	139
Personal Modem 2400 w/Prodigy	119

Hercules

Graphic Card +	169
----------------------	-----

Intel

Classic 2400 Modem Int. / Ext.	139 / 169
-------------------------------------	-----------

Satisfaxion Classic - Internal 9600	379
---	-----

287XL	85
-------------	----

387-DX25 or 33	209
----------------------	-----

387-SX16 / 20	129 / 139
---------------------	-----------

Logitech

ScanMan 32 / Catchword Bundle	165 / 199
-------------------------------------	-----------

ScanMan 256 for Windows	279
-------------------------------	-----

Orchid

ProDesigner II 1mb	279
--------------------------	-----

Tiny Turbo 286	129
----------------------	-----

Tiny Turbo Xtra	269
-----------------------	-----

ATI 9600ETC-E \$369

ATI delivers speed and accuracy with the 9600 Etc-E! It includes V.42, LAP-M, and MNP error correction combined with MNP/5 and V.42 bis data compression to provide total high speed throughput. It features automatic line speed correction, synchronous/asynchronous communication and automatic feature negotiation with connecting with other modems.



Paradise

Basic VGA - 8 bit	99
-------------------------	----

VGA 1024 256K/512K	149 / 179
--------------------------	-----------

Practical Peripherals

2400B Int Modem	125
-----------------------	-----

2400B Int with MNP	159
--------------------------	-----

PM9600SA Ext. V.32/V.42bis	449
----------------------------------	-----

USRobotics

2400 Sportster Int / Ext.	119 / 135
--------------------------------	-----------

2400 Sportster MNP Int / Ext.	159 / 189
------------------------------------	-----------

Courier HST 14,400 Int. / Ext.	539 / 579
-------------------------------------	-----------

Courier HST 14,400 Dual Standard Ext.	839
--	-----

Video 7

GC1024 256K / 512K	159 / 189
--------------------------	-----------

V-RAM II VGA 512K	339
-------------------------	-----

ZOOM

HC2400 Internal	69
-----------------------	----

2400 V.42bis External Modem	159
-----------------------------------	-----

9624 Send/Receive Internal Fax Modem	119
--	-----



International orders welcome
Fax 602-437-8622 or call 602-437-5700 for information.

MONITORS

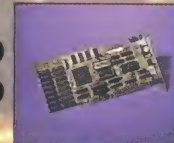
Mitsubishi	
1410 EGA	325
Diamond Scan 1381	499
NEC	
Multisync 2a	469
Multisync GS 2a	199
Multisync 3d	629
Multisync 4d	949
Panasonic C1381 VGA	369
Seiko CM1440 / 1450	499 / 639
Sony 1304 Multiscan	669
Zenith 1492	599

FastData Products

FastData 16 Bit VGA

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.

\$79
256k vram
\$99
512k vram



FastData 16bit 1mb VGA	119
------------------------------	-----

FastData CGA Card	35
-------------------------	----

FastData MGP Card	29
-------------------------	----

FastData Parallel/Dual Serial/Game Card	29
---	----

FastData 2400 Baud Internal Modem

The FastData 2400 baud internal modem is fully Hayes compatible and can be configured to COM port 1-4. It has an internal speaker, is auto answer & auto dial, and comes with communications software.

\$59



9600B SendFax w/ 2400B Modem	99
------------------------------------	----

9600B Send/Receive Fax w/2400B	119
--------------------------------------	-----

IDE 16 Bit 1:1 Hard/Floppy Disk Cont.	29
--	----

RLL 16bit 1:1 Hard/Floppy Disk Cont.	59
---	----

XT 1.44 Dual Floppy Controller	35
--------------------------------------	----

FastData Monitors

Your best value, guaranteed! We have a full line manufactured for us by manufacturers like Hyundai and Matsushita (Panasonic). As with all FastData branded product, you get a full 30-day money back satisfaction guarantee. Shown is the VGA color.



FastData Monitors

14" Amber or White Monochrome	99
-------------------------------------	----

14" White VGA Monochrome	119
--------------------------------	-----

14" CGA Color .52 dot pitch	199
-----------------------------------	-----

14" VGA Color .31 dot pitch	279
-----------------------------------	-----

14" Super VGA 1024 x 768i .28 dp	319
--	-----

14" Non-Int VGA 1024 x 768 .28 dp	429
---	-----

PRINTERS

Canon BJ10E	319
-------------------	-----

BJ300 / BJ330	459 / 599
---------------------	-----------

Citizen

200GX / GSX-130	189 / 249
-----------------------	-----------

GSX140+ / GSX145	295 / 395
------------------------	-----------

Fujitsu DL3400	359
----------------------	-----



Citizen GSX-140+ \$299

The new version of the best-seller! It now comes with 8 resident fonts, paper parking, and a two year warranty. It does up to 220 CPS and has a new enhanced LCD control panel that lets you set everything without DIP switches. Upgrade to color anytime for just \$45.

NEC

P3200	269
-------------	-----

P3300	369
-------------	-----

P6200 / 6300	469 / 629
--------------------	-----------

OKIDATA Okilaser 400	669
----------------------------	-----

Panasonic

KXP1180	155
---------------	-----

KXP1123	239
---------------	-----

KXP1124i	299
----------------	-----

KXP1624	379
---------------	-----

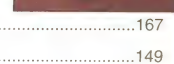
KXP4420 Laser	829
---------------------	-----

KXP4450i / 4455 Lasers	1299 / Call
------------------------------	-------------

Texas Instruments

MicroLaser PS17 \$1199

PostScript laser printing has never been so affordable before. The TI PS17 includes 1.5mb of memory, genuine PostScript by Adobe, and 17 standard fonts including Times, Helvetica, Courier and Symbol. It handles paper up to 8.5 x 14 and envelopes too!



Seiko Smart Label Printer Plus	167
--------------------------------------	-----

Star	
-------------	--

NX1001	149
--------------	-----

NX1500	299
--------------	-----

NX2410 / 2415	249 / 369
---------------------	-----------

XB2410 / 2415	419 / 539
---------------------	-----------

Texas Instruments MicroLaser PS17	1199
--	------

MicroLaser PS35	1499
-----------------------	------

FastData 286/12

\$699

Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a KeyTronic keyboard. And since it's a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- ✓ 12mhz 80286 processor.
- ✓ 1 megabyte RAM.
- ✓ 40 mb 28ms IDE hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add \$59)
- ✓ Standard chassis (shown)
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ Math coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock/calendar, parallel port, game port, & 2 serial ports.
- ✓ KeyTronic enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ MS-DOS 5.0.
- ✓ Full documentation.
- ✓ FCC Class B approved.

286/12	40mb	80mb	100mb	200mb
Mono	\$699	\$829	\$899	\$1,149
Mono VGA	\$799	\$929	\$999	\$1,249
VGA Color	\$949	\$1,079	\$1,149	\$1,399
VGA 1024i	\$999	\$1,129	\$1,199	\$1,449

DATABASE & FORMS

askSam 5.0.....	209
Avery List & Mail Plus.....	37
Clarion Personal Developer.....	45
Clarion Professional Developer.....	449
Clipper 5.01.....	489
DataEase.....	459
dBase III+.....	439
dBase IV.....	479
dBXL Diamond.....	129
Formbase.....	299
FormTool Gold.....	52
Formfiller.....	85
Foxbase Plus.....	179
FoxPro 2.0.....	449
Paradox 3.5.....	489
PerForm Designer & Filler.....	89
Personal Rbase.....	Call
Q & A.....	214
RapidFile.....	99
Rbase for DOS.....	447
Reflex.....	159

PerFORM PRO \$149

for Windows
PerForm Pro has all the advanced features for designing, managing, filling, and printing high-end forms. By splitting the functions of designing and filling forms into separate Designer and Filler modules, PerForm Pro lets you maintain control of form design while you distribute form filling to every work station that needs it. Includes, advanced security features, database links, multi-page forms, calculated fields, pre-designed templates and more.



DESKTOP PUBLISHING

Adobe Postscript Cart. for HPLJ-II.....	299
Adobe TypeSet 1 or 2.....	57
db Publisher Professional.....	389
Express Publisher.....	Call
Pagemaker 4.0.....	489
PFS:First Publisher.....	89



PageMaker 4.0 \$489

The top desktop publishing software for Windows just got better. Version 4.0 adds story editor, a built-in word processor and spell checker. PageMaker's advanced text manipulation and

color design tools gives your publications a professional look. New Table Editor lets you create dynamically linked tables and graphics can flow automatically with text. Also includes Adobe Type Manager for Windows as a bonus.

Printshop.....	33
Publisher's Paintbrush.....	279
Publish It!.....	129
Ventura Publisher Gold / Windows.....	519

FINANCIAL

ACCPAC BPI Value Pak.....	359
ACCPAC Simply Acctg. for Windows.....	119
Bedford Integrated Acct.....	119
DAC Accounting 4.1.....	79
DAC Bonus Pack 4.1.....	119

Managing \$115

Your Money

Andrew Tobias Managing Your Money is the one personal financial manager that does it all! It writes and prints checks, organizes and tracks income and expenses, manages payables and receivables, prints invoices, organizes and estimates taxes, analyzes insurance needs, tracks and amortizes loans, manages your stock portfolio and more. Plus, it includes an electronic rolodex & appointment schedule and can export data to 1-2-3 and tax prep programs.



Dollars & Sense.....	55
Managing Your Money.....	115
Money Matters.....	49
One Write Plus G/L, A/P & A/R.....	165
Pacioli 2000.....	35
Peachtree Complete III.....	139
Peachtree with Data Query.....	209
Quicken.....	36
The Manager's Organizer.....	139
Timeslips II.....	179
Wealth Builder.....	95

GRAPHICS

3-D Charts to Go for Windows.....	55
Autosketch 3.0.....	139
Corel Draw 2.0.....	359
Design CADD 3-D.....	185
DrawPerfect.....	259
Freelance Graphics 4.0.....	299
Generic 3D Drafting.....	199
Generic Cadd Level 2 Starter Kit.....	89
Generic Cadd 5.0.....	279
Harvard Graphics.....	299
PC Paintbrush IV Plus.....	109
Perspective Jr.....	69
PFS:First Graphics.....	89



Visual Basic for Windows \$125

You've heard about it, now you can take advantage of this powerful and easy to use development system for Windows. Microsoft's Visual Basic contains a pallet of visual tools to design and develop true Windows applications. It includes an interpreter to run your applications as you develop them and a compiler to turn them into royalty-free .EXE files. Also includes debugging tools and sample applications you can modify.



We Ship Air at Ground Rates.

INTEGRATED

First Choice.....	95
Framework XE.....	95
Geoworks Ensemble.....	115
LotusWorks.....	89
SmartWare II.....	417
Symphony 2.2.....	489
Works.....	89

MICE/INPUT

Key Tronic 101 Keyboard.....	59
Key Tronic Professional Mouse.....	59
Logitech Mouseman Serial righthand.....	65
Logitech Mouseman Serial w/Windows 127.....	127
Logitech Mouseman Serial righthand.....	76



Logitech MouseMan Serial \$65

Logitech's MouseMan is the next step in mouse evolution. Specifically tailored in

right or left hand versions, it provides maximum comfort and 400 DPI hardware resolution. Includes MouseWare utilities and Lifetime Warranty. Specify right or left, for PaintShow, add \$15.

Logitech Mouseman Cordless.....	129
Logitech Trackman Serial.....	75
Microsoft Serial or Bus Mouse only.....	83
Microsoft Serial or Bus w/ paint.....	95
Microsoft with Windows 3.0.....	147
Z-Nix Serial Mouse w/Windows 3.0.....	89

PROGRAMMING

Macro Assembler.....	95
Microsoft C Compiler.....	303
Borland C++.....	299
Borland ObjectVision for Windows.....	89
Turbo Pascal Dos/Windows.....	90/159
Quick Basic.....	60
Quick C or Quick Pascal.....	60
Visual Basic for Windows.....	125
Windows Developer's Kit.....	309

SPREADSHEETS

Allways.....	115
Excel for Windows.....	299
Lotus 1-2-3 version 2.2.....	325
Lotus 1-2-3 version 3.1.....	399
Lucid 3-D.....	53
Quattro Pro 3.0 Upgrade.....	119
Supercalc 5D.....	89

Lotus 1-2-3 2.3 \$325

The powerful spreadsheet that runs on any PC. New WYSIWYG display, mouse support, 200 graph types, drawing tools and other graphics features to make spreadsheet publishing a breeze. Release 2.3 spreadsheet publishing, auditor, file viewer, context sensitive help, print preview and more. Call us for upgrade information too!

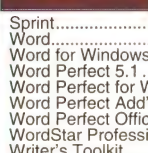


WORD PROCESSORS

Facilitat for WordPerfect.....	57
Grammatik IV.....	55
LetterPerfect.....	119
Multimate 4.0.....	267
Professional Write.....	159
Publisher's PowerPak / WordPerfect.....	call
Rightwriter.....	55

WordPerfect 5.1 \$239

WordPerfect is the #1 rated word processing software. Its got almost every feature imaginable and yet it is easy to use. The current version adds pull-down menus, mouse support, table creation and equation editor. Add this to the best software support in the business and you can't go wrong!



Sprint.....	117
Word.....	209
Word for Windows.....	299
Word Perfect 5.1.....	239
Word Perfect for Windows.....	269
Word Perfect Add'l Station.....	159
Word Perfect Office.....	89
WordStar Professional.....	Call
Writer's Toolkit.....	79

WINDOWS SOFTWARE

Adobe Illustrator.....	309
Adobe Type Align (req. ATM).....	59
Adobe Type Manager.....	59
Adobe Type Manager Plus Pack.....	115
After Dark for Windows.....	25
Ami.....	115
Ami Professional.....	287
Asymetrix Toolbook.....	279
Bistream Facelift.....	57
Corel Draw 2.0.....	359
DBast/Windows.....	239

Excel 3.0 for Windows \$299

The best graphical spreadsheet now includes Toolbar, which puts frequently used commands a single mouse click away. New Q + E lets you access remote databases & Best Fit automatically resizes columns to display longer cell widths. 3-D charts, clip art support, and button macros are included too! Call us on how you can upgrade from your current spreadsheet for only \$129.



Excel.....	299
Form Publisher.....	139
Grammatik IV for Windows.....	55
HDC First Apps or Windows Express.....	55
Micrographix Draw +.....	149
Micrographix Designer.....	449
MicroPhone II.....	199
Microsoft Mouse w/ Windows 3.0.....	147
Microsoft Office (Word/Excel/Powerpoint).....	Call
Microsoft Productivity Pack.....	39
Microsoft Windows Developer's Kit.....	309
Pagemaker 4.0.....	489
PerForm Pro.....	119
PFS:WindowWorks.....	119
Powerpoint for Windows.....	309
Project for Windows.....	429
Publisher's Powerpak for Windows.....	45
Windows 3.0.....	89
Windows Entertainment Pack.....	27
Word for Windows.....	299

Windows 3.0 \$89

Get in on the Windows revolution! Windows turns your 286 or above into a powerful multitasking workstation that runs even non-Windows applications. Includes many integrated applications standard. Plus, if you buy Windows from FastMicro, we'll throw in 12 of the best Windows shareware programs free!



ENTERTAINMENT

Bannermania.....	21
Carmen SanDiego Deluxe Edition.....	45
F-19 Stealth Fighter.....	38
Hunt for Red October.....	19
King's Quest 5 (VGA Vers.).....	38
Leisure Suit Larry II or III.....	35
Microsoft Flight Simulator.....	38
Aircraft & Scenery Designer.....	27
PC Globe or PC USA.....	35
Simcity.....	28
SimEarth.....	39
Ultima VI: The False Prophet.....	39
Wing Commander I / II.....	39 / 45

FAST MICRO



For Pricing on Other Products or to Order, Call Toll-Free (800) 441-3278



TERMS: No Charge for Visa, MasterCard or Discover Card. All orders up to 20 pounds are shipped via Federal Express. Minimum order: \$50. Shipping & handling charge: 3% (Min. \$6). Product warranties, offers & claims are handled by the manufacturer (all FastData branded products are warranted through FastMicro). Compatibility is not guaranteed (except on FastData products). No returns on used items (except FastData branded products). All opened returns are subject to 15% restocking fee (except FastData branded products). DOA's repaired or replaced at our option. Call for return authorization (RA) before returning product. Shipping is not refundable. Sorry, no COD's. Personal/company checks delay shipping. AK, HI, & APO addresses add \$15 per box. Prices/availability subject to change. Purchase orders accepted (no surcharges) from approved corporations only. AZ orders add 6.7% tax. **Mailing Address: FastMicro**
3655 E. LaSalle St., Phoenix, AZ 85040
To place orders call: 800-441-3278
For customer service call: 602-437-0300
FAX: 602-437-8622

Utility Software

Address Book Plus.....	45
Calendar Creator Plus.....	39
Central Point Backup.....	79
CheckIt.....	79



MS-DOS 5.0 \$55

The new Microsoft DOS 5.0 frees 45K or more for DOS on 286 & 386 PC's. It includes a new Shell, Un-delete and Unformat, new Editor and more. Also includes Qbasic, Command

Line Help, new Backup and Windows enhancements. Plus, you can install it on your drive without reformatting, even on Networks. This official upgrade pack requires that you simply have an older command.com on your drive!

Company Ladder.....	45
Control Room.....	69
CoreFast.....	60
Carbon Copy Plus.....	105
Desqview.....	75
Desqview 386.....	125
Direct Access.....	57
Disk Manager Dos / Novell.....	36 / 95
Disk Optimizer.....	37
DR DOS 5.0.....	Call
GoScript 3.0.....	89
Fastback Plus.....	109

Stacker \$79

Stacker doubles the capacity of your hard disk in minutes, without reformatting. It compresses files in the background transparently giving you the extra room you need. For higher performance, Stacker software with coprocessor card (\$139) is an easily installable hardware solution which gives your hard disk a new lease on life.



PC Tools \$99 Deluxe 7.0

New PC Tools 7.0 is the perfect set of utilities for DOS 5. Includes new application menu system, remote operation of another PC, advanced data recovery and an enhanced Backup in DOS and Windows versions. Anti-Virus, which recognizes over 400 known viruses and even detects unknown ones is included as a free bonus.



PFS:Preface.....	47
Pop Drop Plus.....	53
PrintRite.....	55
ProComm Plus.....	65
Prodigy.....	25
QA Plus.....	85
QEMM 386.....	59
QRAM.....	49
SideKick Plus.....	119
Sideways.....	55
Smartcom Exec.....	69
Software Carousel.....	49
Super PC Kwik.....	43
XTree Gold 2.0.....	89

Order Toll Free (USA/Canada)
(800) 628-4517

International Orders
(301) 899-1118

24-HR Worldwide FAX Orders
(301) 899-1888

LPG

& GRAPHICS

**The
Desktop
Publishing
Experts**

The Nation's Largest Dealer of Desktop Publishing & Multimedia Products ... Hours: M-F: 8:30 - 6pm Eastern Time, FAX ORDERS ANYTIME

Software

Aldus Persuasion for Windows	\$315
Charisma by Micrografix	349
CorelDraw	378
Freelance Plus by Lotus	339
Harvard Graphics v3.0 (new version)	CALL
PageMaker 4.0 w/Adobe Type Manager	499
PowerPoint for Windows	329
Ventura Publisher v3.0	508

Fonts & Font Utilities

Adobe PostScript fonts	prices vary - please call
Adobe Type Manager	69
Adobe Type Align	69
Bitstream fonts	prices vary - please call
FontSpace (bitmap font compression)	58
Publisher's Typefoundry by Z-Soft	325
Soft Type by Z-Soft	118

Multimedia & "Print-to-Video"

Authoring Software	
ASK-ME System 2000 by ICS	\$299
IBM Storyboard Live v1.1	289
CD-ROM Disk Players	
NEC CDR-36 player & interface (external unit)	\$499
NEC CDR-73 player & interface (external unit)	699
NEC CDR-83 player & interface (internal unit)	699
CD ROM disk titles - many to choose from	CALL
Computer Animation & Modeling	
Autodesk Animator	\$295
Autodesk Animation Player for Windows	129
Grasp 4.0	209
Computer Sound Recording & Audio Editing	
Sound Blaster / Sound Blaster Pro audio card	159 / CALL
Sound Blaster MIDI Bundle / Voice Editor	109 / 69
Jovian GLORIA (CD-quality stereo digital sound)	CALL
NTSC Frame Grabbers / NTSC Digitizers	
Computer Eyes Color Professional	\$295
Frame Grabber VRT (real-time frame grabber)	479
Jovian SuperVIA (16-bit color/8-bit gray realtime)	655
VIDEO LINX:Framebuffer (video in/out w/grabber)	499
Willow Publisher's Color (16-bit color realtime)	679
NTSC Encoders / Decoders / Genlock / Overlays	
Desktop TV (turns VGA monitor into a TV w/sound)	CALL
Everex Vision VGA w/Overlay 512-KB / 1-MB	549 / 629
Jovian GENIE external scan converter (external unit)	CALL
Jovian VIN Plus NTSC encoder (external unit)	379
Willow VGA-TV GE/O (w/Video Titrer s/w)	645
Video Titrer Software - broadcast-quality titling	
Video Titrer by Entropy Engineering	375

Canon XAPSHOT

Still Video Computer Imaging Kit

Canon's XapShot still video camera lets you photograph anything and immediately transfer the image to a TV or into your computer. Use it to add pictures to your computer-based productions. It's as simple as any 35mm auto-exposure camera. The computer imaging kit comes with camera, accessory kit & frame grabber—everything you need.

XAPSHOT Color Imaging Kit	\$699
XAPSHOT camera only	445
XAPSHOT Lens attachments, disks, batteries	CALL
RC-470, VF-540, RV-301, RP-420 & other units	CALL

Video Monitors & Controllers

IDEK

IDEK MF-5117 17" flat screen color 1024 x 768 non-interlaced
Winner of PC Magazine's Editor Choice Award *CALL

MONITORM

VIKING/3, full-page DTP monitor systems

Viking 3/91M 20" monitor & controller	\$1399
Viking 3/91 GS 20" grayscale monitor & controller	1999
Viking 3/2400M 24" monitor & controller	1999

NEC

NEC 3DS 14" 1024 x 768 color (low emission)	\$659
NEC 4DS 16" 1024 x 768 color (low emission)	999
NEC 5D 20" 1280 x 1024 color monitor	2295

SEIKO Instruments

CM-1440 Multisync 14" Trinitron .25mm dot pitch	\$529
CM-1445 Multisync 14" Trinitron with Orchid ProDesigner II	819
CM-2050 Multisync 20" with ProDesigner II card	1999

High Performance Video Cards

ATI VGA Wonder w/ HiColor DAC 256-KB / 512-KB	\$199/239
Everex Viewpoint Premium w/ HiColor DAC 512/1MB	399/469
Orchid ProDesigner IIs w/ HiColor DAC 512/1-MB	299/379
Sigma VGA Legend 512-KB / 1-MB	249/319
Video Seven VRAM II 512-KB / 1-MB	349/469
Video Seven 1024i 256-KB / 512-KB	169/209

Hercules

Graphics Station

Get the best 24-bit PC color video card. 16.7 million colors with resolution up to 1024 x 768. Uses the TI-34010 60-MHz graphics co-processor. Comes w/ Windows 3.0 driver, AutoCAD 10 & 11, and others. 2-year warranty.

1-MB ISA	\$675	3-MB ISA	\$985
1-MB MCA	CALL	4-MB MCA	CALL

SALE !!! PostScript Laser Printer Summertime SALE !!!

QMS

PS-410 w/2-MB RAM, 45 fonts	1949
PS-410 w/3-MB RAM	2195
PS-410 w/4-MB RAM	2295
PS-410 w/5-MB RAM	2395
PS-410 w/6-MB RAM	2495

PS-815 Laser Printer	3495
PS-825 Laser Printer (dual bins)	4699

ColorScript 100 model 10 / 10p	6495/CALL
ColorScript 100 model 30i (11" x 17")	CALL
ColorScript consumables	CALL

Big Bin paper feeders	CALL
RAM upgrades for printer memory	CALL

BEST OF 1990 — PC Magazine
1990 Eddy Award — MacUser



NewGen Systems Corporation

Hi-Res Personal PostScript Lasers

Turbo PS/300p (300 x 300 dpi)	CALL
Turbo PS/400p (400 x 400 dpi)	2495

Turbo PS/400p IN STOCK

Hi-Res PostScript Laser Printers

Turbo PS/360 (600 x 300 dpi)	3495
Turbo PS/400 (400 x 400 dpi)	3895
Turbo PS/480 (800 x 400 dpi)	4895

11 x 17 Hi-Res/Hi-Speed PostScript Lasers

Turbo PS/600T (600 x 600 dpi)	CALL
Turbo PS/1200T (1200 x 600 dpi)	CALL

On-site service available for QMS and NewGen printers.
Call for details.

TEXAS INSTRUMENTS microLaser

microLaser (300-dpi, 6-ppm, HP LJ emulation)	\$895
microLaser PS-17 (PostScript, 17 fonts, 6-ppm)	1259
microLaser PS-35 (PostScript, 35 fonts, 6-ppm)	1549
microLaser XL PS-17 (PostScript, 16-ppm)	2495
microLaser XL PS-35 (PostScript, 16-ppm)	2795
1-MB 511M memory upgrade	139

Laser Printer Upgrades

Adobe PostScript Cartridge HP LJII	CALL
Bitstream Type City font cartridge	CALL
Complete Font Library cart. for HP III & IIID	289
Pacific PostScript Cartridge PE	395
PacificPage XL accelerated PostScript cart.	795
25-in-One font cartridge	308
HP LaserJet 1-MB RAM upgrade, 5-yr warranty	105
HP LaserJet 2-MB RAM upgrade, 5-yr warranty	169
HP LaserJet 4-MB RAM upgrade, 5-yr warranty	239
EP-L Toner Cartridge for HP, QMS, etc	75
EP-S Toner Cartridge for HP, QMS, etc	85
Hi-Res Toner for NewGen, LaserMaster	175

Laser & Inkjet Printers

CANON	
BJ-10e bubblejet printer 360x360 max res	\$355
BJ-300 80 column 360 x 360 max resolution	465
BJ-330 11" x 17" 360x360 max resolution	665
LBP-4 laser printer / with PostScript cartridge	849 / 1359
LBP-8T laser printer	1899
LBP-8R laser printer (duplex printing)	2199
OKIDATA - 5 year warranty on LED Printhead - OKI OK	
OL400 (4-ppm, 300-dpi, 17 fonts, 512-KB RAM)	\$649
OL800 (8-ppm, 300-dpi, 26 fonts, 512-KB RAM)	949
OL820 (8-ppm, 300-dpi, 26 scalable fonts, 512-KB)	1299
OL840 (8-ppm, 300-dpi, PostScript, 35 fonts, 2-MB)	1999
PANASONIC	
KX-P4420 (300-dpi, HP LJ emulation, 8-ppm)	\$895
KX-P4450 (300-dpi, HP LJ emulation, 11-ppm)	1295
KX-P4455 (300-dpi, 35-ppm, PostScript, 11-ppm)	2095

Color Printers

NEC	
ColorMate model 40, 300-dpi, 17 fonts	\$4695
ColorMate model 80 upgrade, 300-dpi, 35 fonts	CALL
QMS	
ColorScript 100 Model 10p (low cost color PS)	*CALL
ColorScript 100 Model 10 8 1/2" x 11" PS	6495
ColorScript 100 Model 30i 11" x 17" PS	CALL
SEIKO INSTRUMENTS	
ColorPrint CH5504 A size bleed-to-edge	\$5259
TEKTRONIX	
ColorQuick color inkjet printer. PostScript compatible. HP PaintJet compatible. 216-dpi resolution, 24-bit, 16.7 million color capability. Accepts paper or transparency media up to 12" x 18". Optional paper roll feeder.	\$1999

Digitizer Tablets, Mice & Trackballs

CALCOMP	
The WIZ with cursor	\$149
Pen option for the WIZ	64
KURITA - corded or cordless pen & cursor systems	
IS/ONE 8 1/2" x 11" tablet, pen, cursor, drivers	\$329
IS/ONE 12" x 17" tablet, pen, cursor, drivers	3585
IS/ONE 12" x 17" tablet, pen, cursor, drivers	599
SUMMAGRAPHICS	
Summasketch II 12" x 12" 4-button or 16-button	\$389
Summasketch II Pro 12" x 18" 4-button or 16-button	629
KENNINGTON	
Expert Mouse serial/bus	\$99/125
LOGITECH	
MouseMan serial (left handed or right handed mice)	775
MouseMan bus	79
MouseMan cordless mouse	145
TrackMan serial or PS/2	89
TrackMan Bus	89
MICROSOFT	
2-button mouse, 400-dpi resolution serial or bus	\$99

NEC Silentwriter2

PostScript / PCL Laser Printers

NEC 90	\$1595
NEC 990	CALL



MICROTEK TrueLaser

Complete compatibility! Microtek's new TrueLaser printer has Microsoft's TrueImage page description language plus PostScript and PCL compatibility. 35 fonts, auto-switching port selection, PC and Macintosh compatible, very fast first-page-out printing.

TrueLaser \$1895

TRUEPOINT

\$1695 List, Our Price... *Call

TruePoint bundled with Canon LBP-4 Laser	CALL
TruePoint bundled with HP LaserJet III Laser	CALL

Roland Plotters/Sign Cutters

Professional-quality multi-color plotter / sign-maker & sign-cutter that's affordable for office, store, school and home. HP-GL compatible.

SketchMate A-size Plotter	\$499
SketchMate Plotter/Sign Cutter	639
STIKA Scanner / Cutter	699
STIKA w/ SignMate s/w	899

DXY-1100 8-pen A size flatbed plotter	\$769
DXY-1200 8-pen A size flatbed plotter	1019
DXY-1300 8-pen A size flatbed plotter	1359
DPX-2500 8-pen/pencil, 1-MB, A-C size	3395
DPX-3500 8-pen/pencil, 1-MB, A-D size	4095

Call for other plotters not listed here

TruePoint from DP-TEK turns a Canon LBP-4 or HP LaserJet into a true 600 x 600 dpi PostScript-compatible laser! Halftones, line-art and type look photo-typeset. Simple to install. Fully compatible with all PostScript and EPS software. Adobe type 1 compatible, 35 fonts, etc.



EPSON ES-300C Scanner

24-bit, 16.7 million color scanner, one-pass scanning, 600-600 dpi resolution, 256-grayscale. Comes with scanner and interface. Bundled with Picture Publisher Plus, Image-In-Scan, Paint & Plus modules, and ColorLab ES-300C software.

EPSON ES-300C Color Scanner \$1659

Logitech Scanman 256

Hand-held, 256 gray levels, 400-dpi resolution. Bundled w/ Ansel software for Windows 3.0

Niscan GS for Windows 3.0

Hand-held, 256 gray levels. Bundled w/ Image In Scan, Paint and Plus (Windows 3.0 software)

Niscan Spectra Color Hand-Held Scanner

Hand-held, full color

ProScan PS-3000 by OBM

Sheet-fed design (like a FAX machine), 16.7 million colors (24-bit), 256 gray levels. Bundled w/ Picture Publisher Plus image edit software & interface

PS-1000 grayscale scanner with Picture Publisher and interface

Scanning Software & OCR

OCR (Optical Character Recognition)	
Calera WordScan / WordScan Plus	\$399 / 665
Catchword OCR for Logitech hand scanners	189
OmniPage 386 Professional by Caere	385
ReadRight for Windows	339
ReadRight v2.01 for DOS	295

Scanner Software for Image Manipulation & Editing	
Deluxe Paint II Enhanced	\$99
Gray FX by Xerox-Datascopy	295
IMAGE-IN COLOR (new version)	CALL
Picture Publisher Plus by Astra/Micrografix	469
Publisher's Paintbrush for Windows by Z-Soft	295
Tempra Pro by Mathematica	359

MICROTEK COLOR SCANNERS

ScanMaker 600Z

600-dpi color/gray scanner, 16.7 million colors (24-bit) and 256 grayscale. Bundled w/PhotoStyler. Optional auto document feeder attachment available—ideal for OCR!!!

ScanMaker 600G

600-dpi grayscale scanner, 256 gray levels. Legal size flatbed design. Bundled w/PhotoStyler from U-Lead. Optional automatic document feeder attachment available—ideal for OCR!!!

600G for PC & PS/2 \$1099

ScanMaker-1850 35-mm Slide Scanner

1850-dpi, 16.7 million colors (24-bit) and 256 grayscale. Bundled with PhotoStyler. *CALL



ORDERING INFORMATION

Phone Orders (U.S. & Canada)	(800) 628-4517
Phone Orders (International)	(301) 899-1118
FAX Orders (24-hr service)	(301) 899-1888
Customer Service	(301) 899-1118

- > Purchase orders welcome. Call for approval.
- > COD's with certified or cashier's check.
- > No credit card or other surcharges
- > Your credit card is not charged until we ship.

We Ship Worldwide



Mailing address: Laser Press & Graphics, 4888 Stamp Road, Marlow Heights, MD 20748 Make checks payable to: Laser Press & Graphics. Returns require RMA, call for authorization. We do not guarantee compatibility. Non-defective returns subject to a 15% restocking fee. Returns must be in resalable condition. Software is not returnable if opened due to copyright laws. We reserve the right to limit quantities. Prices subject to change without notice.

International Orders Our Specialty. 2-3 Day Delivery Time

If You Like Our Prices... You'll Love Our Guarantee!

If for Any Reason You're Not Satisfied with Our Product, Return It...Anytime, for a Full Refund!

BUSINESS/HOME

- ☐ **Amortization Table 3.5 (1115)** - Handles all types.
- ☐ **Brother's Keeper 4.5C (3 disks) (3120)** - Excellent, full featured genealogy program that's easy to use.
- ☐ **Express Check 4.04 (2 disks) (1110)** - A great program to manage your checking accounts! Even prints checks!
- ☐ **FormGen 4.1a/FormFill 1.5 (2 disks) (3240)** - A very versatile form generator and form filler. Create and/or fill out any kind of form for home or business on any printer. Includes numerous sample forms to get you started!
- ☐ **Home Inventory 4.0 (3137)** - Helps you keep track of everything you own. Great for insurance.
- ☐ **Home Legal Guide 6.1 (3 disks) (3290)** - Over 150 legal forms for almost everything including wills and living trusts. (HD)
- ☐ **Mealmaster 6.15S (2 disks) (3160)** - A complete recipe filer. Comes with over 1200 recipes to start you off.
- ☐ **Names & Dates 4.1 (2 disks) (3140)** - Great personal information manager! Keeps track of anything and everything.
- ☐ **Painless Accounting 5.0 (3 disks) (1120)** - Complete, easy to use accounting! Includes GL/AR/AP, billing, and more (HD)
- ☐ **Painless Payroll (2 disks) (1140)** - Does everything from figuring state & federal taxes to writing checks and reports. (HD)
- ☐ **PC-Write 3.04 (3 disks) (3820)** - Easy to use word processor that is loaded with features including spell checker.
- ☐ **PrintPartner (2 disks) (3260)** - PrintMaster/PrintShop clone that prints banners, signs and more. Includes 200+ graphics.

CLIP ART (PCX)

Note: These disks contain clip art in PCX (PC-Paintbrush) format. They can be used with WordPerfect 5.0/5.1, Pagemaker, Ventura Publisher, Windows or programs that can read PCX files.

- ☐ **Accents & Dingbats (2617)**
- ☐ **Alphabet Soup (2 disks) (2890)**
- ☐ **Birds (2 disks) (2620)**
- ☐ **Business (2 disks) (2630)**
- ☐ **Church (4 disks) (2550)**
- ☐ **Education (2 disks) (2640)**
- ☐ **Family (3 disks) (2650)**
- ☐ **Food (2 disks) (2660)**
- ☐ **Complete Clip Art Collection (58 disks) (2990)** - 1400+ images!
- ☐ **Holidays (2616)**
- ☐ **Houses (3 disks) (2680)**
- ☐ **Kids/Caricatures (2 disks) (2820)**
- ☐ **Ladies (2 disks) (2690)**
- ☐ **Medical (2 disks) (2560)**
- ☐ **Misc 1 (4 disks) (2760)**
- ☐ **Sports (2 disks) (2790)**
- ☐ **Wedding (3 disks) (2850)**

EDUCATION

- ☐ **Algebra Tutor (2 disks) (1820)** - Learn Algebra easily! (CGA)
- ☐ **Lotus Learning System (4 disks) (1420)** - Learn Lotus 2.2 easily and quickly.
- ☐ **Skyglobe 2.5/Earthwatch 1.2 (2 disks) (1880)** - Look at the stars or the earth. Shows constellations, planets, stars, and more. Fascinating program with great graphics. (CGA)
- ☐ **Spelling/Vocabulary Tutor (2 disks) (1870)** - Improve your spelling and vocabulary!
- ☐ **Typing Teacher (2 disks) (1440)** - Learn to type, or improve your typing speed with this set of programs.
- ☐ **Tutor DOS 1.2 (4 disks) (1450)** - The ultimate DOS tutorial, everything you wanted to know about DOS and more. (HD)
- ☐ **Verbal Vanquish (1848)** - SAT Verbal preparation!

Shareware programs require separate payment to the authors if found useful.

GAMES

- ☐ **CGA Tetris Collection (2 disks) (1970)** - Six great variations of the popular game. (CGA)
- ☐ **Chess Challengers & Tutorial (2 disks) (4340)** - Three very good games and a superb tutorial. (CGA)
- ☐ **Kids' Games (2317)** - Fun for the under 12 set.
- ☐ **Super Solitaire (2 disks) (2460)** - 15 great versions. (CGA)

EGA/VGA GAMES

Note: These games require EGA or VGA graphics.

- ☐ **EGA/VGA Tetris Collection (3 disks) (1920)** - 8 high res variations including 3-dimensional versions!
- ☐ **EGA Mouse Solitaire (2 disks) (1930)** - Eight fabulous Solitaire card games that use a mouse.
- ☐ **Commander Keen (1926)** - One of the most spectacular games available! Superb sound, graphics!
- ☐ **Captain Comic 4 (1925)** - Great sound, graphics & more!
- ☐ **Dark Ages (1928)** - From the creators of Commander Keen!

MISCELLANEOUS

- ☐ **Automenu 4.7 (3515)** - Latest version of the most popular menuing program of all time!
- ☐ **Best DOS Utilities (3 disks) (3520)** - Essential utilities for DOS. File finders, and numerous other handy utilities that will save you time. Very easy to use.
- ☐ **Online Bible 5.0 (14 disks) (3170)** - Complete KJV Bible. Includes Greek/Hebrew Lexicon and Cross Reference. (HD)
- ☐ **Vaccines and Virus Killers Ver. 80 (2 disks) (3510)** - Protect your system from viruses! This set will find (and destroy!) over 200 viruses and 500+ virus strains.

WORDPERFECT 5.0/5.1

- ☐ **WordPerfect Art/Graphics 1 (2 disks) (3710)** - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- ☐ **WordPerfect Art/Graphics 2 (2 disks) (3770)** - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- ☐ **WordPerfect Art/Graphics 3 (2 disks) (3780)** - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- ☐ **WordPerfect Art/Graphics 4 (2 disks) (3790)** - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- ☐ **WordPerfect Art/Graphics 5 (2 disks) (3910)** - Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- ☐ **WordPerfect 5.0/5.1 Tools (2 disks) (3750)** - 17+ great utilities for WordPerfect 5.0/5.1.
- ☐ **WordPerfect 5.1 Learning System (3 disks) (4230)** - Learn how to use WordPerfect 5.1 easily and quickly with this great tutorial (WordPerfect 5.1 is NOT required.)
- ☐ **WordPerfect 5.1 Macros (2 disks) (4220)** - Over 100 helpful macros for WordPerfect 5.1.
- ☐ **PC-Draft II & III (2 disks) (3760)** - Create clip art & graphics for WordPerfect 5.0/5.1/Windows. (CGA) (HD)

FREE catalog of over 300 programs
with every order or by request.

WINDOWS 3.0

Note: These disks require Windows 3.0

- ☐ **ATM Fonts for Windows Vol. 1 (4 disks) (4710)** - 30+ fonts for Adobe Type Manager. Will work with all Windows applications. (Requires Adobe Type Manager.)
- ☐ **ATM Fonts for Windows Vol. 2 (4 disks) (4720)** - 30+ additional fonts for Adobe Type Manager.
- ☐ **ATM Fonts for Windows Vol. 3 (4 disks) (4730)** - 30+ additional fonts for Adobe Type Manager.
- ☐ **ATM Fonts for Windows Vol. 4 (4 disks) (4740)** - 30+ additional fonts for Adobe Type Manager.
- ☐ **Chess for Windows (4639)** - Play the great game of chess.
- ☐ **Clocks & Calendars for Windows (4531)** - Never miss an appointment. Includes several clocks and calendars including WinClock 3.0 and Almanac 1.04.
- ☐ **The Complete Icon Collection (4 disks) (4580)** - Over 3200 of the best icons available!
- ☐ **Cursor Utilities (4885)** - Change the cursor and hourglass into any shape you choose!
- ☐ **Fractals & Mandelbrots for Windows (2 disks) (4680)** - Fascinating visual effects and startling graphics.
- ☐ **Games for Windows 1 (4591)** - Great games including Klotz (Tetris Clone), Worm War (Centipede Clone), Atmoids, Lunar Lander, Checkers, Backgammon and more!
- ☐ **Games for Windows 2 (4592)** - Space Walls, Hextris, Mines, Tic Tac Toe, and more.
- ☐ **Games for Windows 3 (4593)** - Tetris, Concentration, Taipei, Arachnid (solitaire variation), Alien Force, and more.
- ☐ **Games for Windows 4 (4594)** - PacMan, Blitzter, Cubic (Rubik's cube), Triplets, Missile Command, Pipe, Wordhai, Tetwin, and more.
- ☐ **Grab Plus 6.0 for Windows (2 disks) (4570)** - Address and print out envelopes from within any Windows application.
- ☐ **Hyperdisk 4.2 (4539)** - Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
- ☐ **Icon Utilities (3 disks) (4260)** - A complete set of utilities to create, view and manage icons.
- ☐ **Menu Systems for Windows (3 disks) (4880)** - Makes Windows even easier to use.
- ☐ **Metz Utilities (2 disks) (4690)** - The utilities that received an Editor's Choice from PC Magazine!
- ☐ **Screen Savers for Windows (4615)** - Eight different screen savers for Windows.
- ☐ **Utilities for Windows (4 disks) (4510)** - 50+ utilities that will help you get the most out of Windows, as well as making Windows easier to use. A must for any Windows user!
- ☐ **Windows Drawing & Paint (2 disks) (4310)** - Three programs for most types of drawing including desktop publishing, CAD and object oriented drawing.
- ☐ **Windows Wallpaper 1 (4 disks) (4520)** - 75+ backgrounds.
- ☐ **Windows Wallpaper 2 (4 disks) (4620)** - 75+ backgrounds.
- ☐ **Windows Word Processors & Editors (3 disks) (4320)** - Two word processors and four text editors that are more powerful than Windows Write and Notepad.

(CGA) Color Graphic Adapter (EGA) EGA Graphics (HD) Hard Disk

Order Toll Free: 800-876-3475

1.75
10 disks or more

2.25
1-9 disks

Information: 503-776-5777/Fax: 503-773-7803

Name _____		Disk size: <input type="checkbox"/> 5 1/4" <input type="checkbox"/> 3 1/2" (add \$1 per disk if you require 3 1/2")
Business/Company (if applicable) _____		No. Disks _____ x\$ _____ = \$ _____
Address _____		<input type="checkbox"/> Shipping \$ 4.00
City/State/Zip _____		<input type="checkbox"/> Federal Express, Next Day (add \$7) \$ _____
Phone _____		<input type="checkbox"/> Federal Express, 2nd Day (add \$5) \$ _____
All checks must be payable in US funds. We cannot accept Eurocheques.		<input type="checkbox"/> COD (add \$5) \$ _____
Method of Payment: <input type="checkbox"/> Check/Money Order <input type="checkbox"/> Visa/MasterCard <input type="checkbox"/> COD		<input type="checkbox"/> Canada (add \$2) \$ _____
		<input type="checkbox"/> Foreign outside U.S./Canada (add \$4) \$ _____
		TOTAL ORDER: \$ _____
Card No. _____	Exp. Date _____	Signature _____



Reasonable Solutions

2101 West Main, Medford, Oregon 97501
Toll free 800-876-3475, or 503-776-5777, Fax 503-773-7803



PCW 9/91

ORDER
Toll-Free
688-6468

1-800



**MINUTEMAN
COMPUTERS**

90 Day Money

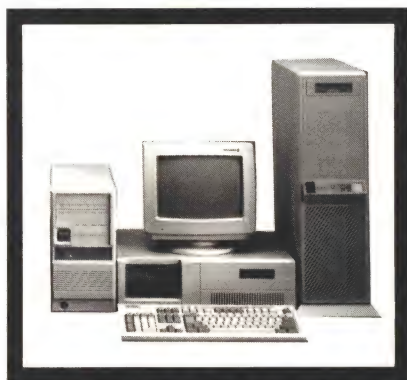
Back Guarantee

2 Year Parts/Labo

286-12/16 MHz

- 1MB RAM
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 42MB hard drive
- 16 bit VGA card
- 14" VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

12MHz \$ **995**
16Mhz **1,105**



386-25/33 MHz

- 4MB RAM - 64KB cache
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 125MB 19ms hard drive
- 16 bit VGA card w/ 512KB
- 14" Super VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$ 1,875/1,925

Drives

SEAGATE

MODEL	MB	SPEED	TYPE	
ST238	30MB		MFM	..... CALL
ST251-1	42MB	28ms	MFM	..... \$ 235
ST157A	44MB	28ms	IDE	..... 202
ST1102A	89MB	19ms	IDE	..... 316
ST1126A	111MB	25ms	IDE	..... 599
ST1144A	125MB	20ms	IDE	..... 412
ST1162A	143MB	15ms	IDE	..... 670
ST1239A	211MB	15ms	IDE	..... 696
ST2383A	338MB	16ms	IDE	..... 1,292

CONNER

MODEL	MB	SPEED	TYPE	
CP3044	40MB	25ms	IDE	..... CALL
CP3184	80MB	28ms	IDE	..... CALL
CP3104	100MB	25ms	IDE	..... CALL
CP3204	200MB	19ms	IDE	..... CALL

MAXTOR

XT 7040A	..... \$ 235
XT 7080A	..... 350

We also carry Micropolis and much more.

TEAC

360K 5.25"	..... \$ 59
720K 3.5" Kit	..... 65
1.2MB 5.25"	..... 70
1.44MB 3.5" Kit	..... 70

Disk Controllers

WESTERN DIGITAL

WD1003VMM1 AT HD Cont	..... \$ 50
WD1006VMM1 AT HD Cont	..... 50
WD1006VMM2 AT HD Cont	..... 65
WD1007VSE2 ESDI 15 Mhz HD/FL	..... 165

IDE CONTROLLERS

2 HD/2 FD with cables	..... \$ 27
2 HD/2 FD w/ 1 parallel, 2 serial, and 1 game	..... 46

ESDI CONTROLLERS

12F 32K Cache	..... \$ 155
12C 1MB Cache exp 16MB	..... 475

FLOPPY CONTROLLERS

AT/XT Up to 4 high-density floppies	..... \$ 35
AT/XT Up to 2 high-density floppies	..... 28
Floppy Controller	..... 23

386sx-16 MHz

- 1MB RAM
- AMI bios w/ setup
- 1.2MB 5.25" drive
- 1.44MB 3.5" drive
- 42MB hard drive
- 16 bit VGA card
- 14" VGA color monitor
- 2 ser, 1 par, 1 game port
- MS-DOS 3.30 or 4.01

\$ 1,325

Monitors

NEC

Multisync 2A	..... \$ 465
Multisync 3D	..... 582
Multisync 4D	..... 994
Multisync 5D	..... 2275

SONY

1302	..... \$ 588
1304	..... 630

PRINCETON GRAPHICS

Ultra 1200 12" VGA Hi-Res	..... \$ 480
Ultra 1400 14" VGA Hi-Res	..... 520
Ultra 1600 16" VGA Hi-Res	..... 845
Ultra 2000 20" Multisync (1280x1024)	..... 1,980

SAMSUNG

Mono Monitor 12" Amber	..... \$ 78
Flat Screen 14" Amber	..... 112
RGB/CGA Color	..... 185
VGA 14" (640x480) .41 dpi	..... 260
VGA 14" (640x480) .31 dpi	..... 315
Syncmaster 2 14" SVGA .31 dpi (1024x768)	..... 340
Syncmaster 4 Color 17" .31 dpi (1024x768)	..... 820

Video Boards

Mono/Color w/ parallel port	..... \$ 32
VGA 256K (640x480)	..... 69
SVGA 1MB (1024x768)	..... 135

Printers

HEWLETT PACKARD

Laser Series III	..... CA
Laser IIIP	..... Too low to adverti
Laser III D	..... CA
Laser II P	..... CA
Laser IIISI	..... CA
Desk Jet 500	..... CA

All accessories available.

PANASONIC

1124/1180	..... CA
1191	..... CA
1624/1695	..... CA
4420	..... CA
4450i/4455	..... CA

EPSON

LQ 810	..... 200 cps, 30 nlq	..... \$ 1
FX 850	..... 264 cps, 54 nlq	..... 2
FX 1050	..... 264 cps, 54 nlq	..... 3
LQ 510	..... 225 cps, 75 nlq	..... 2
LQ 850	..... 330 cps, 88 nlq	..... 4
LQ 950	..... 330 cps, 88 nlq	..... 4
LQ 1010	..... 225 cps, 75 nlq	..... 3
LQ 2550	..... 400 cps, 108 nlq	..... 8

OKIDATA

ML320	..... \$ 3
ML321	..... 4
ML390	..... 4
ML380	..... 2

H-P MEMORY III/IIIP

1 MB	..... CA
2 MB	..... CA
3 MB	..... CA
4 MB	..... CA

PACIFIC DATA

1 MB Upgrade	..... \$ 1
2 MB Upgrade	..... 1
25 in 1 Font Cartridge	..... 21
Other accessories	..... CA

MOTHERBOARDS

286-12	..... \$ 14
286-16	..... 14
386SX	..... 25
386-25	..... CAL
386-25 w/ 64K	..... CAL
386-33 w/ 64K	..... CAL

We accept VISA, Mastercard,
COD on purchase orders.
Dealer accounts welcome.
No surcharge on
VISA/Mastercard.



At Minuteman Computers, we offer a knowledgeable
sales staff, expert technical support, and prompt delivery!

1-800-688-6468
Circle 176 on reader service card

Hours M-F 8:00-5:

(714) **646-9811**

Fax (714) **646-98**

887 19TH ST, UNIT #
COSTA MESA, CA 926

REPLACE YOUR CASH REGISTER!

Business Solutions for Retail Stores, Liquor Stores, Video Stores, Hair & Nail Salons, Auto Repair Shops, Rental Stores.



MicroBiz offers a complete one stop solution to computerizing your business. Leapfrog your competition, control your inventory, reduce shrinkage, billing errors, costs, and time with The MicroBiz Retail Controller Series.

Retail Controller Features...

- ☐ automatic credit card verification
- ☐ bar code compatibility
- ☐ color/size matrix
- ☐ multiple pricing levels
- ☐ track inventory by size/color/style
- ☐ mailing labels
- ☐ track customer history
- ☐ daily closeout reports
- ☐ accepts split tender
- ☐ view in-stock status
- ☐ pull down menus
- ☐ pop-up windows
- ☐ 99 levels of password protection
- ☐ tracks promotional sales
- ☐ prints bar code labels
- ☐ reorder reports
- ☐ extensive sales reports
- ☐ item/invoice discounts
- ☐ tracks sales by employees
- ☐ set limited-time promos
- ☐ links to One-Write Plus
- ☐ receiving reports
- ☐ pop-up calculator
- ☐ built-in word processor
- ☐ works on any IBM PC or compatible with hard disk drive
- ☐ multiuser and source code available
- ☐ dBase compatible compiled with Clipper...

The Retail Controller (\$695) currently used by thousands of locations nationwide.

***** DEALER INQUIRIES WELCOME *** 1-800-637-8268 *****



Auto Repair Shop Controller \$1195

Maximize inventory, track detailed service history, guarantee repeat business, reduce billing errors, improve cash flow, schedule appointments, and produce reports for smarter business decisions.



Hair/Nail Salon Controller \$1195

Imagine a computerized system that keeps in touch with your clients, sending out birthday cards, perm and color reminder letters, customer "thank you" notes...plus keeps complete financial control of your business!



Video Store Controller \$995

This "beginner-proof" video retail management system is flexible enough to work in any location. Scan a bar code or key in video and membership information. Financial and rental information is always up to the minute.



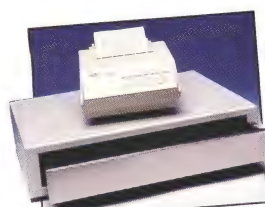
Bar Code Readers \$695

The CCD Bar Code Reader is a handheld non-contact device. It includes a "Y" cable and connects between the keyboard and computer...\$695.00



Liquor Store Controller \$1595

Multi-user for two or more stations. Used by thousands of growing liquor stores and chains nationwide. Monitor every sale, reduce theft, increase profits and meet the needs of your customers.



Cash Drawer/Printer Combo \$595

\$299 each purchased separately or \$595 as a combo package. Plugs right into your PC. The Star DP-8340 is a 40-column dot matrix receipt printer. The Cash Drawer is a sturdy steel electronic unit that opens with signals provided by all MicroBiz Controller products.

Circle 168 on reader service card



Co/Session Host FREE

Free

Access files and programs on your office PC from home. CO/Session is fast, powerful and designed for the businessman on the go. With CO/Session and a modem, our MicroBiz support staff can see and operate your computer from our tech support department.



One-Write Plus Accounting \$225

The MicroBiz Controller Series takes care of the day to day operations of your business. The One-Write Plus Accounting System (Winner, PC World's Best Buy Award) adds full accounting functions, General Ledger, Balance Sheets, Income Statements... to your system.



MicroBiz
500 Airport Executive Park
Spring Valley, NY 10977
Ph:(914)425-9500 Fx:(914)425-4598



Overnight Software Delivery

1-800-637-8268

MicroBiz . . . programming your business for success.





THE HOME OFFICE

The practical guide to home/office computing

Soft solutions for a quicker, slicker computer

Steve Bass

If you're like me, you have an older, slower computer at home that could use a boost. You can speed it up by dropping more than a few bucks on hardware upgrades, or you can use some relatively inexpensive programs to better use existing memory and storage.

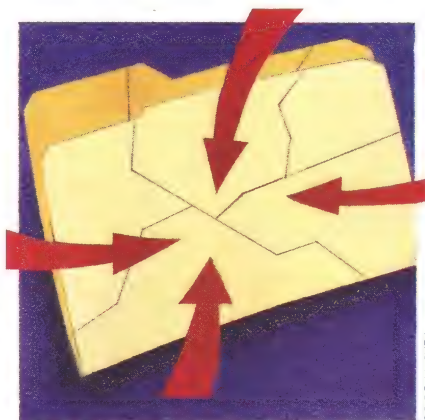
Sad but true, your computer's performance can degrade over time—at least, your hard disk will. As files are deleted, DOS adds portions of new ones to the old spaces. Files become fragmented and your disk gets cluttered. While there's no loss of data integrity, it takes substantially longer to read and write fragmented files than contiguous ones. Hard disk optimization software quickly glues your files back together.

Just follow the menu prompts or create a batch file to run the defragger from the DOS prompt. It takes less than 3 minutes if you do it regularly, depending on how many files you've added and deleted. But of course, it takes longer to follow the menus through the first time. Using Norton's *Speedisk*, it took me 20 minutes to optimize a Plus HardcardII XL with 90MB of very fragmented data.

Unfortunately, even the new DOS 5.0 is about as smart as an artichoke when it

comes to keeping files in a group. I optimize my entire hard disk every week and use *Speedisk* in a housekeeping batch file called DISKLEAN.BAT that I run from the DOS prompt.

First I make sure I'm not running *Windows* or a disk caching program. This is *very* important. Because defragmentation moves files from one spot to another, you shouldn't defrag while a caching program is active. And don't even *think* of optimizing your disk while in *Windows* or another multitasking environment. Moving files around while another application tries to write is a one-way ticket to scrambled data. You *must* move files from a DOS prompt.



COCO MASUDA

But don't discount disk caching—it's another easy way to speed up a slow computer. Caching software relies upon the fact that the files we use change only incrementally; so it sets aside some memory to store frequently used data. When, as happens over and over while you work, you ask for the same data again, you get it more quickly from memory than from the slower hard disk. Disk caching provides an immediate and dramatic difference in the way your computer performs.

Most people have at least a megabyte

of memory but are only using 640K. A caching program makes use of that wasted memory, while reducing the wear and tear on your drive caused by frequent reads/writes.

DOS and *Windows* both come with the SMARTDRV.SYS cache, but it's not nearly as flexible or intuitive as commercial products. I prefer the disk accelerator in Multisoft's *PC-Kwik Power Pak* for my older, slower XT at home. Multisoft claims speed improvements of 10 to 50 percent, depending on the application. It feels like more to me. The *PC-Kwik Power Pak* includes several other speed boosters, such as a RAM disk and a print spooler. They all work in unison, so when the print spooler needs memory, it "borrows" from the cache and "returns" memory when it's finished. Pretty slick.

If \$130 is too great a commitment for you—even discounted to \$75 on the street—the shareware package *HyperDisk* lets you try before you buy. You can find it on BBS's and in user-group libraries.

With just a little work and not a lot of money, you can make your computer a leaner, meaner, and faster machine. ●

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group.

Norton Utilities, 6.0 \$179, Symantec Corp., 800/441-7234
Reader service no. 663

PC-Kwik Power Pak \$129.95, Multisoft Corp., 800/759-5945, 503/646-8267 (fax)
Reader service no. 664

HyperDisk V4.20, \$69, HyperWare, 615/864-6868, 615/864-6870 (fax)
Reader service no. 665

JUST WHEN YOU THOUGHT DELL VALUES COULDN'T GET ANY BETTER.



LEASE \$64.00 MO.* THE DELL 316SX 16 MHZ i386SX SYSTEM. INCLUDES 2 MB OF RAM, 40 MB HARD DRIVE, VGA COLOR MONITOR. FREE MS-DOS SYSTEM SOFTWARE, MICROSOFT WINDOWS 3.0 AND MICROSOFT MOUSE. MS-DOS AND MICROSOFT WINDOWS PRE-LOADED. DISKETTES NOT INCLUDED.

DON'T WAIT!

TO ORDER CALL:

800-289-1260

FOR FASTER PROCESSING REFERENCE #11D11
HOURS: 7 AM - 9 PM CT M-F 8 AM - 4 PM CT SAT

DELL
COMPUTER
CORPORATION

For details, in Canada, call 800-668-3021. In Mexico, 95-800-010-0664.

I WANT ANS.

contract for next business day desk-side service.** Direct access to our toll-free technical support hotline forever. 24-hour toll-free TechFaxSM service. And a 30-day no questions asked money-back guarantee.

In fact, Dell has received 47 awards and kudos in the last 12 months, ranging from *PC Magazine's* Editors' Choice to *PC Week's* Customer Satisfaction Poll. And J.D. Power and Associates has ranked Dell "Best Personal Computer in Customer Satisfaction in Small and Medium Sized Businesses."[†]

SO GET GOING.

Don't wait to get in on this amazing deal. Call now. This offer is good for a limited time only.

For more great prices and specs, we've included a sampling of our computers right here. If you want a full computer listing, call, write or send in the attached reply card for our catalog. It's free too. So get going.

CALL NOW!

TO ORDER CALL:

800-289-1260

FOR FASTER PROCESSING REFERENCE #11D11
HOURS: 7 AM - 9 PM CT M-F 8 AM - 4 PM CT SAT

DELL
COMPUTER
CORPORATION

For details, in Canada, call 800-668-3021. In Mexico, 95-800-010-0664.

NEW LOW PRICES.



THE DELL SYSTEM[®] 433P.
WAS \$5,199

NOW ONLY \$4,299

Lease: \$156/Month*

- i486[™] microprocessor running at 33 MHz.
 - 100 MB VGA Color Plus System \$4,299
- Price listed includes 4 MB of RAM.
80, 200 and 320 MB hard drive configurations also available.



THE DELL SYSTEM 333D.
WAS \$3,499

NOW ONLY \$3,399

Lease: \$126/Month*

- Intel[®] 80386 microprocessor running at 33 MHz.
 - 40 MB Super VGA Color System \$3,399
- Price listed includes 1MB of RAM.
80, 100, 200, 330 and 650 MB hard drive configurations also available.
25 MHz systems also available starting at \$2,699



THE DELL SYSTEM 320LT.
WAS \$3,699

NOW ONLY \$3,199

Lease: \$119/Month*

- Intel 80386SX microprocessor running at 20 MHz.
 - 40 MB, 1 MB of RAM \$3,199
- 20 and 120 MB hard drive configurations also available.
16 MHz systems also available starting at \$2,499.



THE DELL SYSTEM 316SX.
WAS \$1,999

NOW ONLY \$1,699

Lease: \$64/Month*

- Intel 80386SX microprocessor running at 16 MHz.
 - 40 MB VGA Color System \$1,699
- Price listed includes 2 MB of RAM.
20, 80, 100 and 200 MB hard drive configurations also available.



THE DELL SYSTEM 210.
WAS \$1,749

NOW ONLY \$1,549

Lease: \$58/Month*

- 80286 microprocessor running at 12.5 MHz.
 - 20 MB VGA Color Plus System \$1,549
- Price listed includes 1 MB of RAM.
40, 80 and 100 MB hard drive configurations also available.
Monochrome systems also available starting at \$1,349.



mark of J. D. Power and Associates. No other discounts or offers apply. All prices and specifications subject to change without notice. Shipping, handling and applicable sales tax not included in the price. Dell cannot be responsible for errors in typography or photography. Dell and Dell System are registered trademarks and TechFax is a service mark of Dell Computer Corporation. Intel is a registered trademark and i386 and i486 are trademarks of Intel Corporation. Microsoft and MSDOS are registered trademarks and Windows is a trademark of Microsoft Corporation. Ami Pro is a trademark of SAMNA Corp., a wholly-owned subsidiary of Lotus Development Corp. Other trademarks and trade names are used to identify the entities claiming the marks and names or their products. Dell Computer Corporation disclaims any proprietary interest in trademarks and trade names other than its own. ©1991 Dell Computer Corporation. All rights reserved.

MORE BRILL REDUCTION



LEASE \$75.00 MO.*
THE NEW DELL 320SX 20 MHz i386SX SYSTEM.
INCLUDES 2 MB OF RAM, 40 MB HARD DRIVE,
VGA COLOR MONITOR.

MS-DOS SYSTEM SOFTWARE, MICROSOFT WINDOWS 3.0,
AMI PRO™ SOFTWARE AND MICROSOFT MOUSE — FREE.
MS-DOS AND MICROSOFT WINDOWS PRE-LOADED.
DISKETTES NOT INCLUDED.

LEASE \$86.00 MO.*
THE DELL 325P 25 MHz i386SX SYSTEM.
INCLUDES 2 MB OF RAM, 40 MB HARD DRIVE,
VGA COLOR PLUS MONITOR.

YOU'LL SAVE A BUNDLE.

First we reduced the Dell 316SX and 325P to their lowest prices ever. Then we introduced the new 320SX. And to top it off, we threw in MS-DOS 3.3, 4.01 or 5.0, Microsoft Windows 3.0 and a Microsoft Mouse with each system. All pre-loaded. And absolutely free. And with the 325P or the new 320SX, you'll get all that plus

Ami Pro from Lotus. That's a savings of up to \$574.

Add that to our already low computer prices and you've got a deal you can't afford to miss. (No other discounts or offers apply.)

GET GUNG-HO SERVICE.

Boy, do we know how to provide service and support. Every Dell computer comes with a one-year

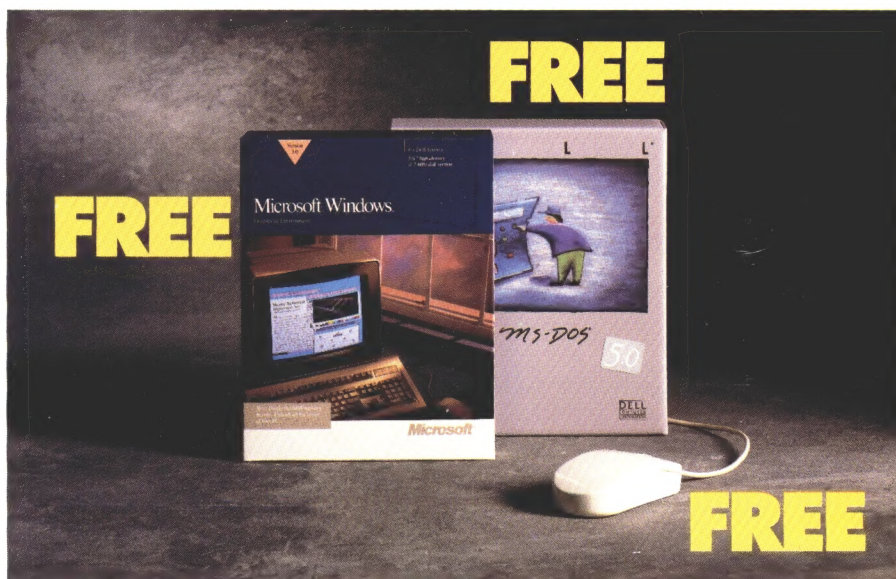
ΔPerformance Enhancements: Within the first megabyte of memory, 96 KB (433P), 128 KB (320SX, 316SX, 320LT and 210), 96 KB (333D, 325P) of memory is reserved for use by the system to enhance performance. Can be optionally disabled on all except the 316LT. *Payment based on 36-month, open-end lease. Leasing arranged by Leasing Group, Inc. In Canada and Mexico configurations and prices may vary. **Onsite service may not be available in certain remote locations. For information on and a copy of Dell's 30-day Total Satisfaction Guarantee, limited warranty and Xerox's Service Contract, write: Dell USA Corporation, 9505 Arboretum Boulevard, Austin, Tx. 78759-7299, ATTN: Warranty. †1991 J.D. Power and Associates' Computer End User Satisfaction Study, Phase I: Office Based Small to Medium Sized Businesses. **Responses from Business End Users at 1,784 business sites. Small to medium sized businesses were based on office sites with between 1 and 499 employees. Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. J.D. Power and Associates is a service

LOW.



THE DELL® 316SX 16 MHz i386™SX SYSTEM.
INCLUDES 2 MB OF RAM, 40 MB HARD DRIVE, VGA COLOR MONITOR.

AND BEHOLD.



FREE MICROSOFT® WINDOWS™ 3.0, MS-DOS® SYSTEM SOFTWARE AND MICROSOFT MOUSE.
MICROSOFT WINDOWS AND MS-DOS PRE-LOADED. DISKETTES NOT INCLUDED.

To find out more, just turn the page.

HURRY!

TO ORDER CALL:

800-289-1260

FOR FASTER PROCESSING REFERENCE #11DJ1
HOURS: 7 AM - 9 PM CT M-F 8 AM - 4 PM CT SAT

DELL
COMPUTER
CORPORATION

For details, in Canada, call 800-668-3021. In Mexico, 95-800-010-0664.

Circle 74 on reader service card